




3 1761 11557617 5

Government
Publications

CA
IA
G-5

Government
Publications



Digitized by the Internet Archive
in 2022 with funding from
University of Toronto

<https://archive.org/details/31761115576175>

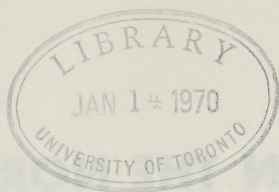
GOVERNMENT ACTIVITIES IN THE NORTH

1968 REPORT & 1969 PLANS

ADVISORY COMMITTEE ON NORTHERN DEVELOPMENT

This report is printed in both English and French version
Cette publication existe en version anglaise et en version française

Government
Publications



ON NORTHERN DEVELOPMENT
ADVISORY COMMITTEE

©
Queen's Printer for Canada
Ottawa, 1969

Cat. No.: R71-7/1968

TABLE OF CONTENTS

	Page
Advisory Committee on Northern Development	1
Department of Agriculture	5
Canadian Broadcasting Corporation	9
Canadian National Railways	19
Canadian Transport Commission	27
Air Transport Committee	28
Water Transport Committee	29
Central Mortgage and Housing Corporation	31
Dominion Bureau of Statistics	35
Department of Communications	45
Department of Energy Mines and Resources	49
Mines Branch	50
Geological Survey of Canada	54
Observations Branch	78
Mineral Resources Branch	83
Marine Sciences Branch	85
Inland Waters Branch	87
Policy and Planning Branch	92
Surveys and Mapping Branch	93
Polar Continental Shelf	97
Department of External Affairs	103
Department of Fisheries and Forestry	105
Fisheries Inspection Branch	106
Fisheries Research Board of Canada	109
Forestry Branch	114
Department of Indian Affairs and Northern Development	117
Canadian Wildlife Services	118
Community Affairs Branch	121
Indian-Eskimo Economic Development Branch	126
National and Historic Parks Branch	131
Northern Economic Development Branch	134
Territorial Relations Branch	149
Department of Justice	157
Canada Department of Labour	159
Department of Manpower and Immigration	163
Department of National Defence	167
Canadian Armed Forces	168
Defence Research Board	171
National Film Board	177
Eldorado Nuclear Ltd	181
Department of National Health and Welfare	183
National Museum of Canada	189
National Museum of Man	190
National Museum of Natural Science	192
National Research Council of Canada	197
Department of National Revenue	203

TABLE OF CONTENTS (Cont'd)

	Page
Customs and Excise	204
Taxation Division	205
Northern Canada Power Commission	207
Northern Transportation Company Limited	215
Post Office Department	217
Department of Public Works	221
Royal Canadian Mounted Police	231
Department of Transport	235
Civil Aviation Branch	236
Airports and Field Operations Branch	238
Telecommunications and Electronics Branch	242
Marine Service	249
Meteorological Branch	261
Unemployment Insurance Commission	265
Government of the Northwest Territories	267
Government of the Yukon Territory	270
Appendices	291
A. Revenues and Expenditures in the N.W.T. & Yukon Territory	292
B. Employment in the North	294
C. Map of Northern Canada on back cover	

MEMORANDUM FOR THE ADVISORY COMMITTEE ON NORTHERN DEVELOPMENT

Government Activities in the North — 1968, — plans for 1969 & 1970

The Cabinet, on 22 January, 1953, directed that the Advisory Committee on Northern Development consider and report periodically on all phases of development of the Canadian north.

This report covers the operations of all the various government departments, agencies and Crown corporations, active in the Yukon and Northwest Territories for the year 1968, and outlines the current plans for 1969 and long term plans for 1970.

The term "Canadian North" has been interpreted to include those parts of the provinces bordering on the territories north of latitude 55°.

A revised appendix showing the trend in northern employment of northern residents in the northern work force has also been prepared. The report, because of its usefulness as a reference work, increases its circulation each year.

This report is unclassified and copies can be obtained in either the English or French version by writing to the Information Division, Department of Indian Affairs and Northern Development.

L.A.C.O. Hunt
Secretary

Advisory Committee on Northern Development,
Centennial Tower Building, 400 Laurier
Avenue West, Ottawa 4, Ontario, Canada.

June 1969.

ADVISORY COMMITTEE ON NORTHERN DEVELOPMENT

ADVISORY COMMITTEE ON NORTHERN DEVELOPMENT

Responsibilities: To advise the government on questions of policy relating to civilian and military undertakings in northern Canada and to provide for the effective coordination of all government activities in that area.

Review of 1968 Operations

The 72nd and 73rd meetings of the Advisory Committee on Northern Development were held in 1968. Twenty-two reports in all were circulated to the members of the Committee during the year.

Several events of significance occurred during the year which stimulated discussion and advice by the Committee and a number of "ad hoc" meetings of various sub-committees resulted.

The discovery of oil at Prudhoe Bay in Alaska, and its effects on Canada's arctic economy was a major subject of discussion. A paper on "The Development of Potential Oil Reserves in the Arctic and Canada's Involvement Through the Northwest Passage", together with a paper on the current situation on Canada's sovereignty in the arctic, resulted in further discussion by special sub-committees from which memoranda to Cabinet were prepared.

The Department of Transport, External Affairs and National Defence, were all active during the year in bringing specific matters before the Committee for discussion and advice.

The U.S.A. through its State Department and other departments showed a greater interest in the arctic regions generally which resulted in several meetings between the U.S. Coast Guard and the Department of Transportation and their counterpart agencies and departments in Canada. These meetings were held under the aegis of the sub-committee on transportation.

The construction sub-committee dissolved and in its place an "ad hoc" committee was convened to determine how best to coordinate all federal construction in the territories. Its recommendations have yet to be approved by the Committee. The Secretary travelled to Edmonton and Montreal in connection with the consolidation of the federal construction program and a satisfactory "modus operandi" was worked out.

Canada's relations with other northern oriented countries was also a subject of discussion and the Committee offered its advice in this and related matters.

This year was also marked by increased scientific interest in the north and several expeditions to the Polar Basin were mounted. The regulations concerning such expeditions were once again amended.

Although only two meetings of the full Committee were held, the sub-committees were quite active, and with developments taking place at an accelerated pace in the two territories, indications are for a greater involvement by the Committee generally for 1969.

The membership of the Advisory Committee on Northern Development was:

The Deputy Minister of Indian Affairs and Northern Development (Chairman)
Deputy Minister of Agriculture
Chairman, Canadian Section, Permanent Joint Board on Defence
The Chairman, Chief of Staff
Deputy Minister of Defence Production
Chairman, Defence Research Board
Deputy Minister of Energy, Mines and Resources
The Under-Secretary of State for External Affairs
Deputy Minister of Finance
Deputy Minister of Fisheries
Deputy Minister of Manpower and Immigration
Deputy Minister of National Health and Welfare
President, National Research Council
Deputy Minister of Public Works
The Commissioner, Royal Canadian Mounted Police
Deputy Minister of Transport
The Secretary, Treasury Board
The Secretary, Advisory Committee on Northern Development

**DEPARTMENT OF
AGRICULTURE**

DEPARTMENT OF AGRICULTURE

Responsibilities: To investigate the potential for agriculture in Northern Canada; through research determine the possibilities and limitations for gardening and farming; advise other government agencies on matters related to agriculture in the Yukon and Northwest Territories, and other unsettled areas of the North; conduct botanical and ecological surveys as required; study the biology, distribution, and systematics of northern insects, plant diseases, and soils.

Long-term Plans

To continue agricultural research at the Experimental Farms at Fort Vermilion and Mile 1019; continue appraisal of agricultural potential in the North on the basis of research, soil surveys, and surveys of native vegetation; collect, identify and classify insects, fungi, and plants; study agro-climatic relationships on a continuous basis; provide agricultural data for an overall study of the natural resources of the North.

Review of 1968 Operations

Experimental work on field and garden crops was continued at Mile 1019, Alaska Highway, and at Fort Simpson as well as at Fort Vermilion in Northern Alberta. In order to obtain new data for evaluating the potential of the Slave River Lowlands a summer field station was established at Grand Detour, about 40 miles north of Fort Smith. Emphasis will be given to studies on suitability of various crops and on fertility and crop management problems.

A report on the agricultural potential of the Slave River Lowlands, based on a survey conducted in 1965, was completed.

Work continued on assessing and correlating soil survey data obtained in previous years. Work also continued on processing botanical material, previously collected, for the Flora of the Northwest Territories.

Two scientists spent a month making entomological collections in the region of Masik River, Banks Island. The material obtained fills an important gap in arctic collections. Another scientist made a study of insects living in Char Lake, Cornwallis Island, as part of Canada's contribution to the International Biological Program. As a basis for this study a collection was made of all stages of the insects living in the lake plus preliminary observations on their ecology and life history.

Plans for 1969

Agricultural research will continue at Mile 1019, Fort Vermilion, and the summer field station on the Slave River. The Fort Simpson Farm will be transferred to the Department of Indian Affairs and Northern Development or closed out as the basic information required for the area has been obtained. It could become a production unit supplying vegetables for the local population.

Two scientists will spend a month on Bathurst Island to study the biology of overwintering insects. Habitats and groups of insects will be selected to correlate with existing studies on insects from temperate areas. Other scientist will continue studies on the insects of Char Lake, begun in 1968.

CANADIAN BROADCASTING CORPORATION

CANADIAN BROADCASTING CORPORATION

NORTHERN SERVICE

Responsibilities: To provide a broadcasting service in the North and to inform the Canadian public about the North by means of radio and television programs.

Long-term Plans

The anticipated use of communication satellites in outer space by the mid 1970s will permit the extension of live radio and television network service to almost all parts of the North. CBC plans are being made toward this end.

CBC will continue to carry out its program of building a total of approximately forty Frontier Package television stations to broadcast programs videotaped from its networks.

To improve and extend the shortwave service to the far North, CBC plans to add three 250 kw transmitters at its shortwave plant at Sackville, N.B., and to construct an antenna system directed to the North. When these are complete, the present eight-and-one-half hours of daily shortwave broad-casts to the North in English, French and Eskimo will be doubled.

Review of 1968

Operations

Frontier Package television stations were established at Uranium City, Saskatchewan, and Whitehorse, Y.T. Stations were already established at Yellowknife, N.W.T. and Lynn Lake, Manitoba. Low-power radio relay transmitters (LPRTs) were established at Carmacks, Y.T., connected to the Yukon Radio Network; Fort Good Hope, N.W.T., and Fort Chipewyan, Alberta, connected to the Mackenzie Radio network; and Churchill Falls, Labrador (in both French and English).

Work was begun on construction of new studio and office facilities for CHAK, Inuvik. When completed in 1969 they will also house the Frontier Package television station.

The CBC, with the Departments of Indian Affairs and Northern Development and Transport, prepared for submission to the Federal Cabinet a proposal to establish low-power FM stations in communities in the Arctic too small to warrant a CBC station or too remote from CBC networks to have an LPRT.

Programs

The basic program service on the medium-wave stations in the North and on short-wave to the North continued as in previous years.

The Northern Service radio stations, with studios at Whitehorse, Yellowknife, Inuvik, Churchill, Frobisher Bay and Happy Valley, each broadcast 127 hours

weekly on 29 transmitters. The shortwave service broadcast eight and one-half hours daily in English, French and Eskimo.

The Northern Service stations broadcast programs from the national networks as well as locally produced programs including many in local Indian and Eskimo languages.

Special programs were produced in 1968 to mark the tenth anniversary of the Service. Some of these were broadcast "outside" on National networks series – THE WORLD AT SIX, MATINEE, and METRONOME. The English radio network observed the birthday on November 10th with a broadcast of Len Peterson's play "Lukasee", a special on the Northern Service, "Ten in the Midnight Sun", and a study of the social conditions of the Eskimo, "Nigger in a Parka".

The Northern Service contributed the program "A New Kind of Friendly" to the national network series BETWEEN OURSELVES. Most Northern stations took part in a Christmas Day musical program, "Carolling Across the North". News reports and interviews were supplied to CBC national and regional News programs.

INDIAN MAGAZINE, the only regular program on CBC for, by and about Indians, and which has been produced by the Northern Service since 1964, was carried on the national English radio network for the first time on October 5 th. A weekly news sheet to supplement the program was sent to over 6,000 subscribers throughout Canada.

News, public affairs and entertainment programs were broadcast by CFFB Frobisher Bay in Eskimo; by CHFC Churchill in Northern Cree, Chipewyan and Eskimo; by CFYK Yellowknife in Chipewyan, Cree, Slave and Dogrib; and by CHAK Inuvik in Eskimo and Loucheux.

Six hours a week of similar programs were broadcast by shortwave in the Eastern, Central and Copper dialects of Eskimo.

Approximately 2,000 messages of greetings, family news, announcements of births, graduations from school, and special anniversaries were broadcast in English and French on NORTHERN MESSENGER, a daily 15 minute feature on shortwave which was first broadcast in 1932.

A special tenth anniversary program series, ATOUTSEKUTAI ("Why Not Together?"), a serial drama in 40 episodes dealing with the daily lives of the people of a small Arctic community, was produced for the Northern Service by Peter Murdoch at Povungnituk in Arctic Quebec, in Eskimo with Eskimo actors. These programs were broadcast on the Northern shortwave service as well as by the Northern Service stations at Frobisher Bay and Firth Churchill.

Plans for 1969

CBC plans to extend its Mackenzie Network by building LPRTs at Fort Norman, Wrigley, Fort Resolution and Fort Providence in the Northwest Territories; to complete new studios and offices for station CHAK, Inuvik, serving the Mackenzie Delta; and increase the power of CFFB Frobisher Bay, on Baffin Island, from 40 to 250 watts.

It will build an LPRT at Rae, N.W.T. when plans for the new town-site are complete.

Frontier Package television stations will be established at Fort Smith, Pine Point (covering Hay River and Fort Resolution) and Inuvik in the Northwest Territories; at Watson Lake, Dawson City, Clinton Creek and Elsa in the Yukon Territory; at Cassiar and Fort Nelson in Northern British Columbia. In 1970 and succeeding years stations will be built at other places for which plans will be underway in 1969.

The program INDIAN MAGAZINE, started by the Northern Service in 1964, will be produced by the English radio network in Toronto from April 1969 with the same production staff.

Plans have been made to have an Eskimo group in Povungnituk produce its own drama series in 1969. It is hoped that this example will encourage Eskimo and Indian groups at other Northern communities to do the same.

INDIAN AND ESKIMO BROADCASTS: NORTHERN SHORTWAVE:

In the shortwave transmission, 200 — 0200 hours daily, one hour is in Eskimo. At present, no original productions in Eskimo are undertaken at the Montreal studios. These are produced at Frobisher Bay, Churchill and Yellowknife.

The Northern Service recently commissioned a series of dramas in Eskimo produced at Povungnituk in Arctic Quebec with Eskimo actors.

The weekly program INDIAN MAGAZINE in English is produced by the Northern Service at Montreal and broadcast on shortwave as well as on the English Radio Network. All Northern Service stations carry it.

Other programs in English that concern themselves closely with matters of interest to the Eskimo and Indian audience are ASSIGNMENT NORTH, TOPICS NORTH, and POINTS NORTH. During the summer months, ARCTIC PATROL reports daily on ship movements in Arctic waters. It is of particular interest to the Eskimo audience, especially information on the annual medical patrol of the C. D. HOWE.

The following programs are scheduled by Northern Service shortwave:

ATOUTSEKUTAI (Why not together?)

Sundays, 1735 — 1970 hours, Arctic Quebec Eskimo serial, family drama in 40 episodes.

UQAUSI (Churchill Calling)

Tuesdays, 2035 — 2060 hours and Thursdays, 2300 — 2330 hours. Central Arctic Eskimo. Feature magazine program by radio station CHFC Churchill, including community news, traditional music and folklore.

IKALUIT QAUSI (Frobisher Calling)

Mondays, 2300 — 2330 hours and Thursdays, 2030 — 2060 hours. Eastern Arctic Eskimo. Feature magazine program produced by radio station CFFB Frobisher Bay, including traditional music and folklore.

INOONOOT OOKAKEEMAGAT (Eskimo Magazine)

Tuesday, 2030 – 2060 hours and Fridays, 2030 – 2060 hours, Central Arctic Eskimo. Produced by radio station CFFB, Frobisher Bay, includes coverage of major Northern news events.

TETERKAT (Messages)

Wednesdays, 2030 – 2100 hours and Fridays, 2300 – 2330 hours, Eastern Arctic Eskimo. Produced by radio station CFFB Frobisher Bay, featuring personal messages from Eskimo patients in Southern hospitals and students attending “outside” schools.

NEEJAWATIT IKALUINEE (Eskimo Hit Parade)

Saturdays, 2030 – 1060 hours, Eastern Arctic Eskimo.

INUIT NUNANITUNUT OKASIT (Looking North)

Saturdays, 2130 – 2160 hours, Eastern and Central Arctic Eskimo. Produced by radio station CFYK Yellowknife, featuring news of Mackenzie District, reports on Territorial affairs, interviews with Eskimo people living at or visiting Yellowknife, etc.

INDIAN AND ESKIMO BROADCASTS: RADIO STATION CHFC, FORT CHURCHILL, MAN.

CHFC is a trilingual station, broadcasting in Indian, Eskimo and English. It serves the immediate area of Churchill and northward along Hudson Bay to Chesterfield Inlet and Coral Harbour. The station clerk and one announcer-operator are Eskimo. As at other Northern station locations, English is the common language and many of the programs, such as the open-line programs, “Public Opinion”, are concerned with topics of mutual concern to the total audience, regardless of ethnic origin. Regular dance “remotes” are staged at the vocational school for Eskimo students who are encouraged to report on club activities, and youth interests.

Programs in Indian or Eskimo include:

NEWS IN ESKIMO

Mondays, Wednesdays and Fridays, 1903 – 1915 hours, Central Arctic Eskimo. A summary of local news events in the area served by CHFC.

TEMPO

Monday through Friday, 1610 – 1655, Central Arctic Eskimo and English. Light music with announcements on community events.

TETERKAT (Messages)

Mondays, 1930 – 2000 hours. Various Eskimo dialects. Messages from hospital patients “outside” as well as between persons at isolated communities in the North.

INOONOOT OOKAKEEMAGAT (Eskimo Magazine)

Tuesdays, 1930 – 2000 hours. Eastern Arctic Eskimo. Produced by radio station CFFB Frobisher Bay. In-depth reports and coverage of major news events in the North and elsewhere.

IKALUIT OQAUSI (Frobisher Calling)

Wednesdays, 1930 – 2000 hours. Eastern Arctic Eskimo. Produced by radio station CFFB Frobisher Bay. Traditional folklore and music.

title of programme to be arranged (will include “Looking North” portions in Eastern Eskimo.)

Thursdays, 1930 – 2000 hours. Eastern Arctic Eskimo. Community events, local news as well as a look at world news events. Program will be local to CHFC, Fort Churchill.

UQAUSI (Churchill Calling)

Also broadcast on Northern Service shortwave and by radio station CFFB, Frobisher Bay. Friday, 1930 – 2000 hours. Feature magazine program including community news, traditional folklore and music.

CREE NEWS

Saturdays, 1403 – 1500 hours. Cree. Feature magazine program. Including weekly news summary.

CHIPEWYAN NEWS

Saturdays, 1530 – 1630 hours. Chipewyan. Feature magazine program including weekly news summary.

ATOUTSEKUTAI (WHY NOT TOGETHER?)

Mondays, Wednesdays and Fridays, 1915 – 1930 hours. Eskimo. Regional production of drama series in 40 episodes.

INDIAN AND ESKIMO BROADCASTS: RADIO STATION CFYK, YELLOWKNIFE, N.W.T.

CFYK is program centre for the Mackenzie network consisting of nine LPRTs in northern Saskatchewan, northern Alberta and the Mackenzie District of the Northwest Territories. There are six or seven major Indian language groups in the network area plus two Eskimo. English is the common language. For this reason, as much as is possible is done to include the special interests of these groups in the locally originated English broadcasts. One announcer-operator and one technician are of Indian background.

COMMUNITY ACTION PROGRAMS

Presently an irregular series of broadcasts produced in co-operation with the Indian-Eskimo Association of Canada. It is a forum for the airing of views on community issues with a view to common action where necessary. Material for these broadcasts is gathered by the I-E.A. in the Indian communities, the resulting programs being presented by CBC. Some are in Indian language. If they wish, the speakers speak in their own Indian tongue. A summary of their statements is usually broadcast in English. A series of such programs were broadcast in 1968.

NEWS IN TRANSLATION – Mackenzie Roundup

Saturdays, 1307 – 1400 hours, in Slavey, Dogrib, Chipewyan, Cree and Copper Eskimo. Weekly summary of news of the network area. (A recent news report dealt with briefs presented at Yellowknife to the Commission on Housing.)

GATHER 'ROUND

Saturdays, 1400 – 1500 hours. Slavey, Dogrib and English. News of co-operatives, interviews, and light music.

CAMSELL MESSAGES

Tuesdays (twice monthly) 2003 – 2030 hours. Dogrib, Slavey, Chipewyan, Cree, Loucheux and Hareskin. Messages recorded by patients at the Charles Camsell hospital Edmonton, to their families.

HEALTH AND WELFARE

Tuesdays (twice monthly) 2030 – 2100 hours. Chipewyan and Dogrib. Hints on health and hygiene, community news, and music.

INUIT NUNANITUNUT OKAUSIT (Looking North)

Tuesdays, 1930 – 200 hours. Eastern and Central Arctic Eskimo dialects. Weekly news of events occurring in the area of the Mackenzie network, reports on Territorial affairs, interviews with Eskimo people living at or visiting Yellowknife, etc.

TALKING WITH THE COMMISSIONER

Fridays, 1730 – 1740 hours. Translations of answers to questions submitted by the public to the Commissioner of the Northwest Territories.

BROADCASTS IN ESKIMO: RADIO STATION CFFB, FROBISHER BAY, N.W.T.

CFFB broadcasts in Eskimo, French and English. Two of the six announcer-operators and the station clerk are Eskimo. Out of a broadcast week of 128 hours, about 18 hours are Eskimo although much of the service in English is of direct interest to the Eskimo audience, many of whom speak English. In addition to the programs listed below, CFFB carries talks by Members of the Northwest Territories Council in Eskimo, provided special coverage of news events, including Territorial and Federal elections.

EASTERN ARCTIC NEWS

Daily at 0730 and 1830 hours, English and Eskimo. Local news gathered from Eastern Arctic settlements, from CBC's newsroom at Yellowknife, and from news reporter at Ottawa. In addition, news in English relayed from Northern Service shortwave ex Montreal translated into Eskimo.

ULLASIU (The Morning Show)

Monday through Friday, 0900 – 1000 hours in Eskimo. Music and spoken work notices of upcoming community events of special interest to women; talks and interviews by an Eskimo on housekeeping and public hygiene thrice weekly. The serial drama ATOUTSEKUTAI (Why Not Together?) is scheduled in this period thrice weekly.

The dramas are repeated at 1845 – 1900 hours to catch an evening audience. During the afternoon, between 1400 – 1430 hours, a variety of half-hour programs are broadcast, some of which are repeated at 1930 – 2000 hours for the evening audience. Those programs marked with an asterisk are produced for broadcast on Northern Service shortwave ex Montreal and by CHCF Fort Churchill as well as being scheduled locally.

IKALUIT OQUASI (Frobisher Calling)

Mondays, 1400 – 1430 hours, with repeat broadcast, 1930 – 2000 hours. Eastern Arctic Eskimo. Program serves traditional cultural interests, featuring stories, interviews, legends and folk music gathered in settlements throughout the Eastern Arctic.

TETERKAT (Messages)

Tuesday, 1400 – 1430 hours, with repeat broadcast, 1930 – 2000 hours. Eastern Arctic Eskimo. Features messages from Eskimo patients and students “outside” to their kinfolk in the North, and messages between persons at isolated settlements throughout Eastern Arctic.

ENOONOOT OOKALEMAGAT (Eskimo Magazine)

Wednesday, 1400 – 1430 hours, with repeat broadcast, 1930 – 2000 hours. Eastern Arctic Eskimo. News magazine program. Provides in-depth summary of recent happenings. These range from conflicts in the Middle East to critical fresh water shortage at Pangnirtung, and include coverage of special events such as elections, death of the Governor-General, etc. Program includes regularly news of Eskimo co-operatives.

NEEJAWATIT IKALUINEE (Frobisher Hit Parade)

Thursdays, 1400 – 1430 hours. (no repeat) Eastern Arctic Eskimo. Light music of current interest.

ANNAIGHT (Ladies Talk)

Fridays, 1400 – 1430 hours, with repeat broadcast 1930 – 200 hours. Eastern Arctic Eskimo. Open-line discussion program dealing with public affairs of special interest to women. (Local women were reluctant to take part in an open-line program for the general audience; this program was created for them to more readily express their views.)

In addition to the programs repeated, the following are scheduled in the evening hours:

UQATTARIT (Speak Out)

Tuesdays, 1900 – 1930 hours. Eastern Arctic Eskimo. An open-line discussion on public affairs. Frequently includes “hot-seat” guests from government departments to answer questions from the public. Topics range from new site for the town garbage dump, or shooting dogs on the loose, to establishing a T.B. hospital at Frobisher.

UQAUSI (Churchill Calling)

Thursdays, 1930 – 2000 hours. Central Arctic Eskimo. Produced at radio station CHFC Churchill. Featuring interviews, stories and music gathered from west side of Hudson Bay.

INUIT NUNANITUNUT OKAUSIT (Looking North)

Produced at radio station CFYK, Yellowknife. Summarizing N.W.T. news, reports on Eskimo people living at or visiting Yellowknife, including miners and hospital patients. Also provides a roundup of community events in the Western Arctic settlements.

OOVEKAND (Youth to Youth)

Saturdays, 1600 – 1700 hours. Eastern Arctic and other Eskimo dialects. A bilingual or trilingual program for youth with light music the major attraction.

INDIAN BROADCASTS: RADIO STATION CFWH, WHITEHORSE, Y.T.

CFWH is program centre for the Yukon network serving 12 LPRTs in the Yukon and northern British Columbia. There is one announcer-operator of Indian background on staff. In language, as well as physically, Indian groups are hived off from one another throughout the valley systems in the area served by the Yukon. English is the one language they have in common. Their special interests are an expressed concern in the local programs produced at CFWH, whether news, public affairs, community events, or music.

The station produces an hour-long program titled KLAHOWYA (Hello) scheduled Saturdays, 1500 – 1600 hours, that is distinctively for the Indian audience. Hosted by a staff announcer-operator the program is mostly in English and includes news, in-depth reporting on events and issues of special relevance to the audience, traditional folklore and music. Reports from community correspondents are an important element of the program.

The station is planning to introduce an open-line program which will concern itself with topics of particular concern to Indian people and require their participation.

INDIAN AND ESKIMO BROADCASTS: RADIO STATION CHAK, INUVIK, N.W.T.

Radio station CHAK is a trilingual station, broadcasting in Eskimo, Indian and English. The station manager is Eskimo, and one announcer has an Eskimo background. While Loucheux Indian is still widely spoken, the use of Western Eskimo has declined. Broadcasts in these languages are directed more to older people who have little knowledge of English.

DELTA ROUNDUP, broadcast thrice daily in English, is the major vehicle for personal messages between persons in the isolated settlements and the bush, for local news and community announcements. At each community there are correspondents (all of Indian or Eskimo background), who provide news of the happenings in their immediate area. The extension of telecommunications in the Delta has permitted the development of an open line (**NIGHTLINE**) program on local public affairs.

In the past year a series of over 15 programs in Loucheux, Eskimo and English was presented as part of the *Community Action* Project sponsored by the Indian-Eskimo Association of Canada.

Regular programs include:

KOOUNGMIGNAKSLA (Smile-A-While Time)

Saturdays, 1403 – 1500 hours, Western Arctic Eskimo. A light music request program that includes short features.

LOUCHEUX REQUEST PROGRAM

Saturdays, 1500 – 1600 hours. Loucheux. As above, but in local Indian language.

CHARLES CAMSELL MESSAGES

Tuesdays, 1903 – 1930 hours (twice monthly). English, Western Arctic Eskimo and Loucheux. Personal messages to their families from patients at the Charles Camsell hospital, Edmonton.

PATIENTS' PROGRAM

Thursday, 1903 – 1930 hours. English, Western Arctic Eskimo and Loucheux. Personal messages and music dedications from and to hospital patients at Inuvik.

Also, in the past year radio station CHAK broadcast a special series of programs on welfare in co-operation with the Department of Indian Affairs and Northern Development. Irregularly, talent shows featuring performers of Indian and Eskimo origin are recorded in the Delta settlements and broadcast by CHAK.

CANADIAN NATIONAL RAILWAYS

CANADIAN NATIONAL RAILWAYS

RAILWAY LINE TO GREAT SLAVE LAKE

The railway line extending from Roma in northern Alberta north to Hay River and to Pine Point on the southern shore of Great Slave Lake in the Northwest Territories perform three main transportation functions:

- (a) provides direct rail service to extensive lead-zinc deposits at Pine Point, just south of Great Slave Lake;
- (b) provides a railhead at Hay River general freight traffic to and beyond Hay River, in particular freight moving by barge line down the Mackenzie River system to the Arctic;
- (c) provides rail service to agricultural and lumbering areas in the northwestern part of Alberta traversed by this rail line.

Concerning the lead-zinc deposits at Pine Point, some two centuries ago a young Englishman, Samuel Hearne, had paddled and portaged his way from Hudson's Bay westward a distance of some 1500 miles. His mission was to explore the country for his employer, the Company of Gentlemen Adventurers Trading Into Hudson's Bay, and in particular to report upon the mineral resources of the Region then known as Rupertsland.

Discovering a great freshwater sea, Hearne named it Great Slave Lake after the Slave Indians who fished its waters. Noting mineral in the area which we now refer to as Pine Point, he reported:

"What I first mistook for silver proved to be lead.

This is best left to the savages, who melt and shape it into weights for their fishing gear."

While some claims had been staked as early as 1898, for some time there was little interest shown in or much attempt made to develop these deposits. Consolidated Mining & Smelting and some associates did some exploration work in the late Twenties but this was reduced to the bare minimum on the onset of the depression of the Thirties. In the late Forties a drilling program was embarked upon and by 1954 the presence of a substantial orebody was indicated.

In 1955 the provision of a railway to the Pine Point area was strongly recommended in a brief presented to the Royal Commission on Canada's Economic Prospects by Mr. R.G. Robertson, then Commissioner of the Northwest Territories.

In 1957 Major J.L. Charles, Consulting Engineer, Canadian National Railways, made a general reconnaissance to examine possible railheads for a point of commencement and termini of a rail line and routes which might be followed. Having in mind that the Pine Point ores and concentrates would constitute the largest potential source of traffic for a railway line into the Great Slave Lake region, it was obvious that any railway line into the region should be so located as to serve the Pine Point orebody. Respecting a point of commencement for a railway line north to Great Slave Lake, two alternative locations were considered: Grimshaw, Alberta and Waterways,

Alberta; the first is on the Northern Alberta Railways' Peace River Subdivision and the second is the northern terminus of the Northern Alberta Railways' Waterways Subdivision. At either location, Grimshaw or Waterways, a rail line from Great Slave Lake would connect with Northern Alberta Railways' line south to Edmonton and there with the Canadian National transcontinental network, with a connecting branch line to the Canadian Pacific main line east and west at Calgary, and with gateways to American lines to the south.

Major Charles' preliminary reconnaissance concluded that a rail line from Grimshaw to Pine Point, i.e. the western route, would be approximately 440 miles long and would cost around \$60,800,000. A rail line from Waterways, i.e. taking the eastern route, would be about 405 miles long and cost around \$62,500,000. These estimates were based on a preliminary reconnaissance ONLY and would require an extensive ground location survey to confirm; also, they were based on 1957 price levels.

In May 1958 the Canadian Government indicated that Parliament would be asked to authorize construction of a railway line to Great Slave Lake.

There followed considerable controversy respecting route to be taken, and in June 1959 a Royal Commission was appointed to enquire into and report upon the respective merits of alternative routes which might be followed. The Commission comprised: Justice M.E. Manning, Chairman; Dr. W.D. Gainer, Commissioner; Mr. J. Anderson-Thompson, Commissioner.

Northern Alberta Railways, on behalf of its parent railways (Canadian National and Canadian Pacific) in presenting a brief to the Commission on this matter of route, compared alternative routes from the point of view of the economic factors involved and concluded that:

- (a) based on a preliminary reconnaissance, railway construction costs would be about the same on the east and west routes;
- (b) the east route (from Waterways) would have better grades, shorter route mileage and enjoy greater volume of traffic, and operating costs per unit of traffic would be lower on the route from Waterways;
- (c) resources and development potential were considered greater on the east (Waterways) route;
- (d) immediate and potential rail traffic on the east (Waterways) route was considered greater;
- (e) with existence of the Mackenzie Highway and planned development of highway facilities in northern Alberta and the Northwest Territories in mind, construction of a railway from Waterways would make a greater contribution to a balanced transportation network serving these areas than would construction of a railway from Grimshaw.

The Commission made its report, in effect three reports, in June 1960. The conclusions of each of the three members of the Commission reflected the differing emphasis placed by each Commissioner on the several factors involved. One member of the Commission favored the eastern route, considering the freight revenue

prospects over both the short and the long term on the eastern route were better than on the western route. Another member of the Commission favored the western route, apparently mainly because it promised to provide direct rail service to a larger population. The Chairman considered that if, because of urgent desires of the Pine Point Mining Company, construction of a railway were to begin at once, then on balance he tended to favor the western route.

The majority opinion, that inclined to the western route, was accepted by the Government. A ground survey of the western route was begun by Canadian National Railways in December 1960.

An agreement between the Government, Canadian National Railways, Consolidated Mining & Smelting Company and Pine Point Mines respecting provision of the proposed line was negotiated.

Legislation authorizing construction of the line was introduced in Parliament in June 1961 and received Royal assent in December 1961. In speaking to the legislation, in Parliament, the Minister of Transport pointed out that apart from serving the Pine Point Mines development and townsite, the rail line would provide railway service for some 8,000 people engaged in farming and would aid in agricultural development of arable lands adjacent to the railway right-of-way; it would aid commercial fishing on Great Slave Lake and gold mining at Yellowknife and assist development of forest resources in the region traversed by the railway, stimulate mineral development, and form a link in defence establishments in the north.

The agreement between the Government, Canadian National and the mining interests concerned provided for construction of the railway line, by Canadian National, at Federal Government expense with Pine Point Mines Limited making a contribution to capital cost of the line on the basis of an agreed amount per ton shipped, varying with value of the mineral material handled, for a period of 10 years, of up to \$2 million a year, or a maximum possible contribution by the industry to capital cost of the rail line of \$20 million.

The railway line is 377 miles long between Roma (point of takeoff near Grimshaw) and Hay River, its northern terminus on Great Slave Lake, with a 55-mile branch eastward to Pine Point Mines, making a total of 432 miles. Topography of the country traversed is such that it was possible to build to a maximum gradient of 6/10ths of 1 percent; curvatures are light, mostly 1 to 4 degrees with a few of 6 degrees. Steel is 100 pounds per yard for the first 136 miles and 85 pounds per yard for the remainder of the distance.

No major difficulty was met in construction. The most formidable obstacle was the crossing of the Meikle River valley approximately 73 miles north of Roma; here a 1730-foot long steel bridge some 175 feet high, with two long timber trestle approaches, was needed to cross the valley. All told, there were eight major steel bridges and thirty-three lesser steel and timber structures built on the line.

Extensive areas of muskeg occur between Keg River (Mile 128 on the railway) and Hay River, and between Hay River and Pine Point; it was possible to avoid most of this without much penalty in distance. Permafrost was expected north of latitude 59° but fortunately not much was encountered, contrasting with the railway line to Churchill where the final 150 miles were built on permafrost which was left undisturbed.

While clearing and bridge work on a project of this kind has been carried on pretty much throughout the year, up until recent years grading had been generally restricted to the open months, June to October, when it is practicable to excavate cuts and build embankments with earth and other materials otherwise subject to freezing. However, grading work on the Great Slave Lake railway job proceeded the year round. Once the winter crust was broken the frost was not allowed to penetrate again until compaction was complete. More than 15 million yards of soils material was graded and using close controls it was possible to produce a roadbed in three years' time, a fair proportion of which was built in winter, capable of withstanding 130-ton gross car loadings in 10,000-ton trains.

Rail was laid with a self-propelled "on track" machine developed by Canadian National. This equipment is powered by a diesel engine and has an electric generator and air compressor that operates a conveyor, a travelling crane, impact wrenches and mechanical spike drivers. All the materials required for one mile of track were hauled behind the equipment on seven flat cars – two for rails, four for ties, one for fastenings. Rails, with splice bars attached, were moved ahead from the flat cars by the travelling crane working from an overhead monorail. Ties moved forward on the conveyor. The apparatus went ahead with a uniform speed of 10 feet per minute. Men and machine were able to lay a mile of track per shift. During the long northern summer days we sometimes laid two miles in a day.

Considerable time was gained during the month of January 1964 by some leapfrogging. The Mackenzie Highway was well frozen by then and capable of withstanding heavy hauling. A 44-ton diesel locomotive was operated to the end of steel at Mile 227, lifted on to a lowboy trailer and moved 142 miles to Pine Junction, 8 miles south of Hay River, and the point at which the extension eastward to Pine Point takes off. Some 250 feet of track had already been hand-built at Pine Junction to receive the locomotive and four flat cars that were roaded from Mile 227.

Six hundred truckloads of rails, ties and miscellaneous hardware were moved by highway to Pine Junction in the winter of 1963-64. When spring came we were ready to begin building the Pine Point extension using a Hyster caterpillar fitted out with rail "walking shoes" to do the rail lifting. Good weather blessed the work that summer. The Pine Point extension was connected in October to the main branch line to Hay River and we were in a position to take some raw ore out and to move concentrator machinery in to the concentrator site in the following month, i.e. November of 1964. Tracklaying proceeded on the main branch to Hay River in the winter of 1964, in temperatures that ranged to 47° below zero.

The Mackenzie Highway being located close by the new railway line, for much of the distance within sight of the railway, was, of course, of very considerable assistance throughout the locating of the rail line and in its construction as it permitted work to go ahead at a number of points at the same time.

No telegraph or telephone line was erected on the railway right-of-way. Employing the Canadian National Telecommunications and Alberta Government Telephones microwave system along the Mackenzie Highway that terminates at Hay River, all dispatching and communications between railway stations and enginemen and conductors on trains is carried over this microwave system which has "drop outs" every 56 miles. Communications between the front and rear end of trains is by portable receiver-transmitters.

Employment of Eskimos on construction of the railway might be noted. In the summer of 1965, six Eskimos from the Arctic Coast were employed; of these, two single men returned home within six months but the married couples stayed and are still with the railway. In 1966, fifty Eskimos came south and worked on ballasting gangs that summer. In succeeding summers, there have been increasing numbers of natives coming south and seeking employment of their own volition. At the present time there are about two dozen Eskimos in permanent employment on this railway, working in a wide range of duties. Two of the original group, George Porter from Gjoa Haven is Terminal Supervisor at High Level, and Elijah Allen from Inuvik is Equipment Maintainer at Roma.

It was expected that the line could be built sufficiently to handle traffic in about four years' time but to allow for contingencies a time estimate of five years was provided in the legislation. Actually, it was possible to handle traffic on a construction basis by November 1964 or three years after start of work. Some tidying up, etc. still remains to be done and it is expected this will be completed this summer.

Concerning volume of traffic being handled over this railway line at present, this is running at about a million tons annually — about 80 percent of the total being southbound and 20 percent northbound. Approximately 85 percent of the total southbound traffic is mine products, grain constitutes about 8 percent and lumber about 5 percent of the southbound. Petroleum products represent about 60 percent of the total northbound.

The mining development at Pine Point Mines represents an investment of over \$60 millions for mining properties, and mine plant and equipment, i.e. not taking into account ancillary investment in transportation facilities.

The second transportation function of the railway line to Great Slave Lake is to provide a railhead, at Hay River, for freight to and from beyond Hay River, in particular freight moving by barge down the Mackenzie River system to the Arctic. Freight handled by rail to Hay River and there transferred to Northern Transportation Company barges for furtherance down the Mackenzie amounted to approximately 65,000 tons last year; this figure is expected to be appreciably greater in 1969, reflecting in particular the increased oil drilling activity in the Mackenzie Delta and nearby Arctic Coast areas. One sees a wide variety of freight in a typical barge load — construction and oil drilling equipment, pipe, vehicle and heating fuels, building materials and components, drilling mud and other supplies, to mention some.

Concerning development along the route traversed by the rail line to Great Slave Lake, the new investment in agricultural activity — in grain elevators (nine at the present time) and new acreage broken and brought into production — has been fairly substantial. So, too, has been investment in lumbering activity.

To sum up, with construction of the railway line north to Great Slave Lake we have seen: important new mining development in the region served by the railway, linking up by rail of the transcontinental rail network and barge transportation arrangements on the Mackenzie River system to the Arctic Coast, stimulation of agricultural activity and of lumbering activity generally in the region traversed by the new rail line.

Ancillary developments in the region, in which the coming of the railway might be considered to play a part, would include some increase in population, improvement in variety of economic opportunity and in level of economic activity, and improvement in amenities of life available.

This increase in economic activity, flowing from provision of the railway line to Great Slave Lake, makes for an increase in the Gross National Product of Canada. It contributes on the plus side to Canada's Balance of Payments. Finally, through new income generated, it means additional taxation base in support of Government activities and programs.

**CANADIAN TRANSPORT
COMMISSION**

CANADIAN TRANSPORT COMMISSION

AIR TRANSPORT COMMITTEE

Responsibilities: The licensing of air carriers to operate commercial air services; the economic regulation of air carriers; investigations and surveys relating to the operation and development of commercial air services in Canada and advising the Minister of Transport on matters relating to civil aviation.

Long-term plans

Normal planning to meet responsibilities.

Review of 1968

Operations

Gap Pine contracts were awarded to Wheeler-Northland Airways Limited and Eastern Provincial Airways (1963) Limited as follows for the period July 1, 1968 to June 30, 1969:

Wheeler-Northland Airways Limited

between Frobisher, N.W.T. to Resolution Island

Eastern Provincial Airways (1963) Limited

between Goose Bay — Cartwright and return
between Goose Bay — Hopedale and return
between Goose Bay — Saglek and return
between Goose Bay — St. Anthony and return
between Goose Bay — Stephenville and return

With regard to DEWLine contracts the vertical airlift was awarded to TransAir Limited and the lateral to Nordair Limited.

Supervision and coordination of these contractual arrangements continue.

The Committee has continued to deal with applications for additional air services in the North and to provide information on their availability.

Plans for 1969

Normal planning to meet responsibilities.

CANADIAN TRANSPORT COMMISSION

WATER TRANSPORT COMMITTEE

Responsibilities: The Water Transport Committee has general responsibility respecting the economic aspects of water transport for all regions of Canada and encompassed therein would be water transport into and out of the North.

Long-term Plans:

The Water Transport Committee has no specific plans for a future program of work in the North but the special needs of northern development are kept under review.

Review of 1968

Operations:

The Commission concurred in a recommendation to the Governor in Council granting unconditional exemption from the coasting laws of Canada for certain ships carrying goods destined for the Yukon and northern British Columbia.

Plans for 1969:

Similar recommendations will be considered in respect of future years as the need arises.

**CENTRAL MORTGAGE &
HOUSING CORPORATION**

CENTRAL MORTGAGE AND HOUSING CORPORATION

Responsibilities: Design of housing, preparation of town development plans, and drafting of planning legislation as requested from time to time by the Department of Indian Affairs and Northern Development.

Financing of housing under the terms of the National Housing Act.

Long-term Plans

The facilities of the National Housing Act and the services of the Corporation will be made available wherever and whenever they are required.

Review of 1968 Operations

1. Lending Activities:

During 1968 housing units financed in the north under the National Housing Act totalled 479, compared with 179 units in 1967. Of these, 282 units were in the Yukon Territory and 197 in the Northwest Territories.

- (a) **Northwest Territories** — the demand for loans in the Northwest Territories centred in Yellowknife as a result of its growth as an administrative and governmental centre. Assistance was provided by C.M.H.C. in obtaining proposals of the following rental projects:

24 housing units — this project was substantially completed and occupied by the end of the year.

100 unit high-rise apartment building — the loan commitment for this project was issued in December 1968, construction to start in the spring of 1969. The successful proponents have agreed to rent the completed units at specified rental rates to the government of the Territories under a long-term bulk lease agreement.

- (b) **Yukon Territory** — approval of loans for 188 housing units to be located in the new town of Faro for employees of Anvil Mining Corporation Ltd. accounted for most of the activity in the Yukon.

The second mortgage plan provided by the Governments of the Yukon Territory and of the Northwest Territories, as an addition to amounts available under the National Housing Act, continued in operation. The plan is administered by Central Mortgage and Housing Corporation on behalf of the Territorial Governments. During the past year three such loans were made in the Yukon bringing the total to 53 since the program began in 1962.

2. Partnership Activities — Yellowknife

(a) Land Assembly

Two land assembly projects have been undertaken in the Town of Yellowknife.

The first project, located south-west of the existing built-up area and known as the 57th project, contains 67 residential lots, a four-acre multiple unit housing site and park land. Forty-nine residential lots have been sold and the construction of 24 multiple housing units is nearing completion on the four-acre site. The financing of most of the dwellings was assisted by NHA loans.

The second land assembly project is located east of the Town in an area known as the "School Draw". It contains 142 residential lots and three multiple housing sites. Servicing was substantially completed in 1968 and arrangements have been entered into for the disposal of 32 lots. A contract has been awarded by the Northwest Territories Government for the construction of a high-rise apartment building with NHA financing on one of the multiple housing sites. (See 1 (a) above). The remaining lots will be offered for sale in the Spring of 1969.

Services include watermains, sanitary sewers, gravel surfaced roads, concrete sidewalks and curbs and street lighting. Costs are shared by the Federal Government, the Northwest Territories Government and the Town, 75% – 15% – 10% respectively.

(b) Public Housing – Senior Citizens

A project to house elderly persons is proposed for a site adjacent to the old St. Patrick's School at the corner of 52nd Street and 52nd Avenue. The building design was prepared by Central Mortgage and Housing Corporation and provides for 17 bachelor units with a common lounge. It is expected that tenders will be called in the Spring of 1969.

(c) Public Housing – Low-Income Families

At the request of the Town Council an investigation has been undertaken of a 24-unit public housing project to house families of low income. A preliminary Design is being prepared by CMHC with prospect of calling tenders early in 1969.

(d) Single Persons Residence

The Territorial Government has requested NHA financing for a 50-bed hostel to house single persons. The various forms of assistance available to support such a project are under review.

Partnership Activities – Hay River

Public Housing – Low-Income Families

During 1968 the feasibility of constructing an initial public housing project of 20 units has been investigated and preliminary designs prepared in anticipation of a Spring tender call.

Partnership Activities – Inuvik

(a) Public Housing – Low-Income Families

A proposal for the construction of up to 40 units of public housing for low-income families has been put forward by the Territorial Government. A potential site for such a project is being investigated.

(b) Single Persons Residence

A previous proposal for a 12-unit extension to an existing hostel did not proceed due to difficulties arising from the site limitations and the impracticability of adding an additional floor. The feasibility of constructing a 40-unit single persons residence with NHA financing is under review.

Partnership Activities – Fort Smith

Public Housing – Senior Citizens

The conversion of an existing apartment building to provide eight self-contained units for senior citizens was abandoned due to reports of soil instability. A new project on a different site is to be investigated.

3. Research Grants and Studies under Part V, NHA, 1954

A further grant of \$130,000 was made to the University of Manitoba for continuation of a research project by the Centre for Settlement Studies focused on the problems of settlements which have been established as a result of resource development on Canada's northern frontier.

Mr. S. H. Dietze completed a study entitled "The Physical Development of Remote Resource Towns". This study is based on an examination of many remote towns in Canada, England and the Scandinavian countries.

The second stage of a housing study of isolated communities was undertaken by Kennedy/Li/Simonsen/Smith of Winnipeg. This consists of the printing and distribution of the report of Stage I completed in 1967, discussions with provincial and regional authorities, the preparation of a pamphlet for communities in which the testing of prototype houses may occur and a pamphlet illustrating certain immediate action that could be taken to improve existing housing.

4. Plans for 1969

A joint review of the public housing requirements in the four organized municipalities is proposed in order to provide for effective administrative arrangements and forward planning covering such needs for the next three years. This will be undertaken in co-operation with the Department of Indian Affairs and Northern Development.

**DOMINION BUREAU OF
STATISTICS**

DOMINION BUREAU OF STATISTICS

AGRICULTURE DIVISION

Fur Production

Data were obtained on the numbers and values of pelts taken in both regions for the Fur Season 1967-68. The number of pelts exported from the Northwest Territories and the prices paid to trappers were provided by the Government of the Northwest Territories, Yellowknife, N.W.T. The number of pelts exported from the *Yukon Territory* and the prices paid to trappers were provided by the Yukon Territorial Game Branch, Government of the Yukon Territory, Whitehorse, Yukon.

No change in procedure is contemplated in the future.

CENSUS DIVISION

Responsibilities: It is the responsibility of the Division to conduct a census of population and agriculture in the North as required under the Statistics Act.

Long-Term Plans:

Up to the last census the responsibility of collecting census data in the N.W.T. was delegated totally to the RCMP. It is our plan for future censuses to have regular census commissioners and enumerators take over gradually the more settled areas of the N.W.T. The Yukon is already under regular census commissioner authority.

Review of 1968

One member of the Census Division has been observing the Manpower Survey in the Keewatin District being done by Indian Affairs and Northern Development. His experience should assist in establishing and evaluating new methods for the 1971 Census in the North.

EDUCATION DIVISION

In general the Education Division collects and publishes statistics on schools and other education institutions in the Yukon and Northwest Territories the same as for the provinces. Specifically, this includes statistics on enrolment and teachers in elementary-secondary schools, enrolments in vocational and technical education, on adult education and on libraries.

At the elementary-secondary level, for the Northwest Territories, in cooperation with the Department of Indian Affairs and Northern Development two extra tabulations are prepared — one on enrolment by race: Eskimo, Indian and Other, a second on promotion and non-promotion.

Statistical summaries on elementary-secondary schools where appropriate and needed are provided to the Departments concerned.

HEALTH & WELFARE DIVISION

Public Health Section

Notifiable Diseases

New cases of notifiable diseases (certain epidemic and infectious diseases as recommended by the Dominion Council of Health) for Yukon and Northwest Territories are collected weekly.

A weekly summary* report on notifiable diseases is prepared for distribution to Provincial Department of Health, National Health and Welfare Department and other agencies. Statistical information related to notifiable diseases are also published annually.**

It would not take one clerk more than one week to prepare all the data for publication on Yukon and Northwest Territories.

No future plans for work in the North are anticipated at the present time.

* Req. = 9007-501 – Notifiable Diseases – Weekly Summary

**Cat. = 82-201 – Annual Report of Notifiable Diseases

Tuberculosis

Notifications of new active and reactivated cases (incidence of tuberculosis) for Yukon and Northwest Territories are collected and published monthly* and** annually by Public Health Section.

Tuberculosis out-patient drug treatment statistical information for Yukon and Northwest Territories are collected monthly but published annually.

Tuberculosis institutional data (admission-separation) for Northwest Territories are collected monthly but published annually.** (There are no TB hospitals in the Yukon.)

It would take one clerk close to two weeks to prepare all the data for publication on Yukon and Northwest Territories.

No future plans for work in the North are anticipated at the present time.

* Cat. = 82-001 – Incidence of Tuberculosis

**Cat. = 83-206 – Tuberculosis Statistics
Volume I – Tuberculosis Morbidity and Mortality

Vital Statistics Section

Responsibilities: Under long-standing arrangements, the vital statistics offices of the two Territories supply DBS with copies of birth, marriage, stillbirth and death records filed in their jurisdictions under their Vital Statistics Ordinances, from which statistics are compiled for

official national statistics. In turn, DBS supplies the Territorial Office with detailed annual tabulations relating to their areas, for local and administrative purposes. In addition to total counts of such events occurring in each local area, these tabulations provide detailed information on marriage, fertility and mortality rates for the total population and the principal ethnic groups, which serve for long-term planning of health, social welfare and other services.

Long-Term Plans:

Forms used for the reporting of births, marriages and deaths will be revised to conform to prototypes recommended by the Vital Statistics Council for Canada. Ordinances will also probably be revised to conform to model legislation recommended by the Council. Computerization of tabulation procedures in DBS will result in acceleration of tabulations supplied to the Territorial administrations.

Operations, 1968

Detailed tabulations of births (cross-tabulating ages and other characteristics of the parents and of the event), marriages (by religion, status, etc.) and deaths (by cause, age, sex, and other characteristics) were provided to the northern administrations covering the events occurring in 1967. Arrangements were made, for the first time, to classify all events by newly-organized health districts.

Plans for 1969

Medical information on death records will be classified by a new International Disease Classification (effective January 1, 1969) thus providing more detailed information than formerly on causes of death, for epidemiological and other research purposes.

Employees:

Equivalent of one to two months' clerical time to prepare annual tabulations and other compilations.

Judicial Section

Responsibilities: The Judicial Section has responsibilities for statistics on law enforcement, the administration of justice and corrections, and for the sequential integration of these data to give a full statistical description of the process of dealing with offences, accused persons and offenders. The objective of the Section is to show the effectiveness of the law enforcement, judicial and rehabilitative processes, and permit the various agencies of the criminal justice system to evaluate their efficiency.

Long-Term Plans:

No long-term future plans, except changes which the new integrated criminal statistics information systems may bring about in the present criminal statistics method.

Operations:

Catalogue No. 85-201 *Statistics of Criminal and Other Offences*

Data for Yukon and Northwest Territories

- I. Persons charged with indictable offences by sex; persons convicted by specified age groups and sex;
- II. Persons convicted under the Narcotic Control Act by type of offence, country of birth;
- III. Convictions of offences punishable on summary conviction.

Respondents: three local court clerks.

Catalogue No. 85-202 *Juvenile Delinquents*

Indications for Yukon and Northwest Territories

- I. Appearances before the courts and results;
- II. Residence;
- III. Characteristics.

Respondents: three local court clerks.

Catalogue No. 85-204 *Police Administration Statistics*

Data on police strength, personnel and transport for Yukon and Northwest Territories broken down by

- I. Police force;
- II. Ratio of policemen per automobile.

Respondents: R.C.M.P. "Air" Detachment.

Catalogue No. 85-205 *Crime Statistics (Police)*

Catalogue No. 85-206 *Traffic Enforcement Statistics*

Information for Yukon and Northwest Territories distributed by type of force.

Offences under the Criminal Code, Federal and Territorial Regulations are broken down by offence reported, unfounded, actual number, cleared otherwise, persons charged.

Rates per 100,000 population aged 7 years and over and percentages are shown.

Motor vehicles stolen, persons missing, located and drowned are included in *Crime Statistics*.

Traffic accidents, persons killed, injured and property damage are given in *Traffic Enforcement Statistics*.

Respondents: R.C.M.P. "Air" Detachment.

Catalogue No. 85-207 *Correctional Institution Statistics*

- I. Percentage of number of persons in custody to standard capacity for Yukon and Northwest Territories;
- II. Population movement in and out for R.C.M.P. Guardrooms, Whitehorse Correctional Institution, Yukon Mobile Institution, Yellowknife Correctional Camp and Fort Smith Training Centre;
- III. Place of sentence of territorial offenders by penitentiary.

Respondents: twelve local officers.

National Parole Board Statistics (1)

Information by regional office for Yukon and Northwest Territories

- I. Rates of parole failures;
 - II. Percentages of failure at point of release;
 - III. Parole suspensions by year.
- (1) Source: National Parole Board publication but information processed in the Judicial Section.

Catalogue No. 85-209 *Murder Statistics*

Murder incidents and victims in the Territories.

Employees: To perform the foregoing activities in the North, one office worker spends 1/4 man-year.

Institutions Section

In 1967, there were 34 general and allied special hospitals operating in the Yukon and Northwest Territories. The following is a breakdown by type, with rated bed capacities:

Public	9	hospitals with 255 beds
Private	1	" " 8 beds
Federal	24	" " 334 beds

Hospital returns are sent to each hospital through the Yukon Territorial Hospital Insurance Service in Whitehorse and the Department of Indian Affairs and Northern Development in Ottawa. General and financial returns go to public hospitals and general only to private and federal. Data are published in a series of 11 annual reports.** In total, it wouldn't take one clerk more than one day to tabulate or transcribe all the data published on Yukon and Northwest Territories. No plans for expansion are contemplated at this time.

**Catalogue numbers: 83-201; 205, 207; 210-217.

Manufacturing and Primary Industries Division

Responsibilities: To collect, compile, analyze and publish, within the provisions of the Statistics Act, statistics on manufacturing, mining, logging, fishing and energy for the Northwest Territories and the Yukon Territory.

Long-Term Plans:

To continue and, where applicable, to intensify the current statistical program, particularly with respect to seeking means of increasing the amount of publishable data by seeking authorization of individual respondents for release of otherwise confidential data and by other appropriate measures.

Review of 1968

Operations:

In keeping with the plans for 1968 outlined in the corresponding report for 1967, the Division conducted an extensive review of the possibility of publishing separately more data on the Northwest Territories and the Yukon Territory. As a result, separate statistics are now published for the manufacturing industries in the Northwest Territories (10 establishments with shipments of goods of own manufacture of \$3,017,000 in 1966) and in the Yukon Territory (11 establishments with shipments of \$717,000). Monthly electric power statistics were published for each territory beginning in 1968, and the annual report for this industry for 1967 and future years will also show separate statistics. It was impossible, however, to publish logging even on a combined basis for the two territories, because of lack of sufficient establishments to prevent disclosure of confidential data.

The regular annual surveys on mining, and both monthly annual surveys on fishing continued to be published for both the Northwest Territories and the Yukon Territory. In addition, monthly and annual statistics were published on pipelines in the Yukon Territory.

Plans for 1969:

To continue the expanded program of publication introduced in 1968.

Employees:

Nil.

Provincial Liaison and Consultative Services

Responsibilities: DBS conducts special surveys upon request of federal or provincial departments or agencies to help satisfy their needs for data.

Long-Term Plans:

None.

Review of 1968

Operations:

At the CMHC request, Provincial Liaison and Consultative Services Staff acted as consultants in a survey on housing in Whitehorse, Metropolitan area. CMHC granted \$8,000 to the Yukon Territorial Government to cover the cost of enumeration, editing, coding and miscellaneous expenses (printing, rental of vehicle, etc.) DBS bears the cost of its staff allocated to the project (salaries and travelling expenses). Field work took place in March and April 1968.

The aim of the survey was to assess the housing condition in Whitehorse Metropolitan area to allow the Yukon Territorial Government to formulate a housing policy.

Plans for 1969:

None.

Employees:

Casual, skilled employees, hired locally: 1½ man-years (they were paid by the Yukon Territorial Government).

Transportation and Public Utilities Division

Long-Term Plans:

No future plans with a specific orientation to Northern Affairs.

Review of 1968

Operations:

Railways — Our Rail Unit is responsible for collection, etc., of statistics of common carrier railways, including those operating in the Yukon and Northwest Territories. These railways are the White Pass and Yukon Route Railway and the new Great Slave Lake Railway. The publications of direct relevance are:—

DBS Catalogue No. 52-207 to 52-212

Railway Transport (Annual, Parts 1 to 6 (For Railway Companies)) — These comprise a summary; and details of, finances; equipment, track and fuel; operations and traffics; commodities freighted; and employment. Prior to 1968, the statistics for the White Pass and Yukon Route Railway were shown separately in Parts 2, 3, 4 and 5. This was discontinued for 1968 statistics, but the data is available from source documents at DBS. Separate details for the Great Slave Lake Railway have not yet been made available to DBS by CNR.

DBS Catalogue Nos. 52-002 (Quarterly) and 52-205 (Annual)

Railway Freight Statistics – These include breakdowns of total railway freight traffic by commodity and province of loading and unloading. In this, the Yukon and Northwest Territories are shown as a combined area; the figures published cover shipments of both railways concerned.

Sources of all of these statistics are the White Pass and Yukon Railway Company, and Canadian National Railway.

Road Transport – Main publications covering aspects of the North are as follows: In all cases, the Yukon and Northwest Territories are separately identified.

DBS Catalogue No. 53-201

Road and Street Mileage and Expenditure Data – Sources (1) and (2).

DBS Catalogue Nos. 53 – 218, 19, 20

Motive Fuel Sales; Motor Vehicle Registrations; Revenues (i.e., Motor Taxation, etc.) – Sources (1) (3), and (4).

DBS Catalogue Nos. 53-206, 53-001, and DBS Daily Bulletin (Monthly)

Accident Statistics – Sources (3) and (4).

Sources

- (1) Territorial Treasurer, Whitehorse, Yukon Territory.
- (2) Director, Northern Administration Branch, Department of Indian Affairs and Northern Development.
- (3) Registrar of Motor Vehicles, Department of Indian Affairs and Northern Development, Whitehorse, Yukon Territory.
- (4) Commissioner of the Northwest Territories, Yellowknife, Northwest Territories.

Water Transport – Publications which separately identify data for Northwest Territories are as follows: There are no significant Yukon Ports, and Northwest Territories traffic is coastal (Canada-to-Canada) only. Operations of fishing and pleasure craft are not covered.

DBS Catalogue Nos. 54-204, 6, 7

Shipping Reports, Parts III, IV and V – These comprise statistics of vessel movements and freight traffic at ports. In 1968, four companies with operations in the Northwest Territories submitted data.

DBS Catalogue No. 54-205

Water Transportation Report – This comprises financial data for For-Hire carriers, common and contract, passenger and freight. In 1968, four companies based in the Northwest Territories submitted data for this report.

Air Transport

Civil Aviation — The Aviation Statistics Centre prepares statistics for DBS, the Department of Transport and the Air Transport Committee. The two main publications giving statistics for the North are as follows: Data for special analyses of passenger and cargo traffic are also available, and some new publications are planned.

Air-line Passenger Origin and Destination Statistics

(Air Transport Committee publication, but 1968 statistics will be published by DBS).

This lists the number of domestic air-line passengers originating and terminating at places in Canada.

Aircraft Movement Statistics (Department of Transport)

These statistics are published monthly and annually, separately for airports with, and without, air traffic control towers.

Public Utilities — This Section collects and publishes annual statistics in which details for the Yukon and Northwest Territories are identified, as follows:

Catalogue No. 56-201 — Telegraph and Cable Statistics

Includes for Marine radio stations of the Department of Transport the number of commercial messages to and from ships, and to and from stations, and selected telegraph and cable statistics.

Sources are Canadian National Telecommunications and the Department of Transport.

DBS Catalogue No. 56-203 — Telephone Statistics

Includes details of telephones by type of service, numbers of residence telephones, and telephones on automatic switchboards and operated by central energy; details of miles of lines of various types; number of systems and exchanges served by high frequency radio systems; employees, salaries and wages; capital and repair expenditure.

Sources are Canadian National Telecommunications and Bell Canada.

**DEPARTMENT OF
COMMUNICATIONS**

DEPARTMENT OF COMMUNICATIONS

Responsibilities: In July, 1968, elements of the Defence Research Board, Department of Transport and Privy Council Office were transferred to the jurisdiction of the Postmaster General by Order-in-Council, in anticipation of legislation early in 1969 which will formally create the Department of Communications. The new department is responsible for the development and utilization generally of communications undertakings, facilities, systems and services for Canada, not by law assigned to another department. The north is an area to which the department is devoting particular attention by studying the needs for telecommunications services, by researching systems to meet those needs and by coordinating, regulating and fostering their implementation. Public systems are constructed and operated by commercial communication companies. Private systems are established also, to meet the special needs of their owners.

Long-Term Plans

The aim of the department is to have the communications frontiers extended northward so that the quality of service may be equivalent to that enjoyed in southern Canada. Research will be undertaken to determine optimum technical solutions and programs involving public and private investment will be encouraged and arranged. Of major significance, in the long term, are plans for a Canadian domestic communications satellite. This will be a relay system with the principal benefits arising from the provision of live television to CBC transmitters as they expand to the smaller remote communities, thus bringing them closer to the mainstream of Canadian life. The satellite also will permit expansion in the telephone service, particularly where new major resource developments occur and a sudden demand for a large number of circuits arises. Through research effort it is planned to design a portable telephone and television ground station for use with future satellite systems, a station that can be put into operation on short notice to provide a few circuits for new small communities.

The terrestrial telecommunications system, which has proven so effective in the western Arctic, will be expanded to provide additional circuits to the lower MacKenzie via a radio system to the Yukon, a system that will serve intervening points as well. A study on the feasibility of direct broadcasting from satellites has been made. Because there are problems requiring international resolution, such a system probably will not be realized until the late 1970's; however it will have significant benefits for northern areas in terms of direct television service to individual homes and very small communities, making feasible the complete coverage of all of the Canadian population.

Review of 1968 Operations

Continued financial support was rendered to the Canadian National Telegraphs for their MacKenzie Valley system, making possible a substantial expansion in the telephone exchanges at Yellowknife, Fort Simpson, Inuvik, Pine Point as well as in the Yukon at Clinton Creek, Carcross, Carmacks and in Cassiar, B.C. New VHF base stations were established at Horn Plateau and Yoho, B.C.

In the eastern Arctic, continued financial support to CNT was provided for the Frobisher tropospheric terminal. Bell Canada inaugurated new telephone services at Hopedale, Indian Tickle, Tub Harbour and Triangle, all in Labrador.

A revenue arrangement, guaranteed by the federal government, is making possible the conversion of the Churchill area telephone exchange to unattended dial operation.

In a continuing program of improving the effectiveness of radio operation in the north, a monitoring station was operated at Fort Smith and ionosphere stations in Churchill and Resolute made measurements in conjunction with the Alouette-ISIS Satellite program.

Of major significance to the future of communications in the north, was the tabling in 1968 of the government's White Paper on Satellite Communications. The legislation needed for setting up the Corporation which will construct and operate the system, will be considered by Parliament in 1969. Such a system would give the maximum improvement in the distribution of television signals but in the long run it would permit major improvements to telephone and other services as well.

Plans for 1969

This year will see a substantial increase in studies, policy development and planning for the improvement of northern communication services needed to support economic and social expansion.

The satellite communication system planning will continue within the department but is expected to transfer in the latter part of the year to the new corporation. Contract awards for satellites and ground stations will be let.

A study will be made of the Dew Line capability to determine if commercial traffic from Prudhoe Bay and a CBC programme circuit can be carried in the western section.

Studies will be made to determine if Bell Canada high frequency radio telephone services can be extended to scattered settlements around Frobisher as well as to additional settlements in Labrador.

Plans have been made by CNT to install VHF base stations at Nahanni Butte, Yellowknife, Frank, Reindeer Depot, Tuktoyaktuk, N.W.T. and by Bell Canada for L'anse au Loup, Red Bay, Mary's Harbour, Fox Harbour, Pt. Hope Simpson, Labrador. H.F. radio-communication service will be extended to Fishing Ships Harbour, Pinsent Arm and Snug Harbour, Labrador.

New Telephone exchanges are planned for Fort Franklin, Hay River and Echo Bay, N.W.T.; Faro and Mt. Nansen, Yukon.

The Keewatin high frequency radiotelephone system will be extended to Repulse Bay and improvements will be made in the service to Baker Lake.

DEPARTMENT OF ENERGY MINES & RESOURCES

DEPARTMENT OF ENERGY, MINES & RESOURCES

MINES BRANCH

Responsibilities: Technical assistance for the development of mining and metallurgical industries in the North and for the development and utilization of petroleum and natural gas resources. Consulting advice and investigations on metals, metallic and non-metallic minerals, fuels, petroleum, and natural gas as related to northern development.

Long-term Plans

To continue technical assistance in developing mineral, petroleum, and natural gas resources in co-operation with industry, the Department of Indian Affairs and Northern Development, and other branches of government.

Review of 1968 Operation

Metallic Ores:

Work continued on the gold-silver ore from near Carmacks, Yukon Territory. This ore is a difficult mixed sulphide-oxide ore and the Mines Branch has been co-operating with the company to develop a treatment scheme to improve recovery of gold and silver. The mine went into operation in August 1968, using a flotation process. Tailing losses are considered to be high, so the recovery of gold and silver from tailings by the cyanidation process is now being investigated. Results show that cyanidation will recover an additional 7% of the gold in the ore samples investigated. The investigation is continuing to develop the most efficient process. Meanwhile, tailings are being stockpiled in anticipation of a cyanidation circuit.

The investigation to develop a treatment scheme for a lead-zinc ore from the Homer Lake area, N.W.T. showed that the high grades of concentrate required to justify shipping to a smelter could not be obtained from the ore samples submitted without sacrificing reasonable recovery. The investigation was therefore suspended pending further exploration by the company.

At the request of the Canada Tungsten Mining Corporation, mining scheelite from their property in the N.W.T., the Department was asked to investigate the reduction of calcite in scheelite concentrates. While this product is highly saturated with fatty acid, and has a very fine particle size, there has been initial success in reducing the calcite content by further flotation, preceded by treatment with additional chemicals in an ultrasonic bath. This project is currently in progress.

Other Minerals:

A sample of lapis lazuli from Frobisher Bay area (Lake Harbour) submitted by the Department of Indian Affairs and Northern Development, is being investigated for its potential as a gem-quality rock.

Three clay samples from near Cambridge Bay were submitted by the Department of Indian Affairs and Northern Development. It was found that the samples were low-grade, common calcareous clays, and that they were unsuitable for ceramic products.

A detailed mineralogical study is in progress on the matrices of the Dubawnt and Athabasca sandstones to determine compositions and assist in tracing the history of these rocks.

Several samples of geologic materials from different locations in the Yukon and Northwest Territories have been examined to assess their potential values. They include samples of asbestos, soapstone, Sb - Pb - Au - Ag ore, and lapis lazuli.

Examinations have been made of bottom muds from Alert, N.W.T., to assist the Inland Waters Branch in its studies of water supply and disposal systems.

Mineralogical Examinations:

Personnel in the Mineralogy Section undertook a mineralogical investigation of gold-silver ore from Mount Nansen Mines in the Carmacks district of the Yukon Territory. In addition, a sample of banded iron ore from the Arctic Islands was examined at the request of the Department of Indian Affairs and Northern Development.

Extraction Metallurgy:

The process for the production of high purity tungsten products from intermediate grade tungsten mineral concentrates, which has been under development at the Mines Branch for possible use by the tungsten mineral producer in the Northwest Territories, was further improved in the past year. In the recent work a technique of leaching the scheelite concentrate with weak hydrochloric acid was introduced to remove impurities, thereby upgrading the concentrate somewhat. This pretreatment would reduce the cost of subsequent acid decomposition of the scheelite mineral and eliminate most of the phosphorus.

Two projects were undertaken to assist a gold mine in the Northwest Territories. One was to determine the best method of stripping gold that had been absorbed on activated charcoal. This was made necessary when the smelter in the United States which had been buying the loaded charcoal refused to buy it when the two-tier price for gold was instituted. The second project was undertaken to assist the same mine to reduce the amount of arsenic being discharged into Yellowknife Bay in the effluent from the milling operation. Following the laboratory test work, an engineer spent a week at the mine.

Visits to the following mines in the Yukon Territories were made by the Industry Liaison Officer of the Extraction Metallurgy Division of the Mines Branch:

New Imperial Mines Ltd.
United Keno Hill Mines Ltd.
Arctic Gold and Silver Mines Ltd.
Mount Nansen Mines Ltd.

Operating problems were discussed with the managers and mill superintendents and the Mines Branch representative was able to make several suggestions to improve operations.

As in previous years, the facilities of the Mines Branch were made available for the annual meeting of the Canadian Mineral Processors (formerly Canadian Gold

Metallurgists) at which technical and operating experience relating to gold and base metal milling in Canada was exchanged among mill superintendents and between mill superintendents and Mines Branch staff.

Chemical Analysis:

The work done during the past year by the Fuels Research Centre is essentially in the field of chemical analysis. The research on the relation of the sulphur isotope ratio of Melville Island tar sand to the oxygen content is continuing. The interpretation of the results has been complicated by the apparent discovery of wide variations in the sulphur isotope ratio of the tar sand in the Athabasca region. The purpose of these experiments is to secure a clearer insight into the question of how much oxygen is incorporated into the organic matter at the time of deposition, and how much is later acquired through oxygen accumulation from oxidizing groundwaters and weathering.

A mine air analysis was performed for the Arctic Gold and Silver Mine, Yukon Territory.

The Use of Steels at Low Temperatures:

Research has continued in an attempt to obtain a better understanding of the characteristics of ductile and brittle fracture in structural steels at low temperatures. The dynamic effect of a sudden small increment of brittle fracture under static loading has been established. Further work has shown the relative significance of sharp notches and fatigue cracks, and enabled estimates to be made of the distribution of energy absorption between the crack initiation and crack propagation stages.

High strength steels, up to 200 kpsi tensile strength, give somewhat lower energy absorption values, but are less affected by temperature and may be used successfully at low temperatures when due allowance is made for their fracture toughness. Studies of the behaviour of steels of this type are in progress with particular respect to the accurate determination of their fracture toughness in thick sections and the conditions governing failure.

The depths of a number of cracks in two stainless steel ice-breaker propellers were measured using a Crack Depth Indicator developed within the division.

A program of evaluation and testing of steel rails has been carried out for one of the Canadian steel railroad rail producers in close collaboration with the Quebec North Shore Railroad in Labrador. This program can assist in the production of improved rails for railroads servicing the Northern Canadian mining industry.

Advice has been given to the National Energy Board on the field welding of gas pipelines at low ambient temperatures, relating to practice in Northern British Columbia, and more generally, with respect to relevant welding code provisions.

Considerable attention is being given to the problem of ensuring adequate toughness in steel for oil and gas transmission pipelines, particularly in Northern Canada, where low ambient temperatures, can cause a severe loss in toughness.

Galvanizing and the Canadian Zinc Industry:

In co-operation with the Canadian Zinc and Lead Research Committee work has continued on several aspects of galvanizing, particularly connected with the production of uniform coating thickness on certain low alloy high strength structural steels, and more fundamental work to obtain a better understanding of galvanizing reactions. These studies are connected with northern development in that galvanized high strength structures are particularly viable in the north because of the minimum maintenance required. Also, by improving the competitive position of galvanizing, this increases the sale of Canadian zinc, much of which is mined and processed in northern areas. (This also applies to work which has been done to assist the commercial development of a Zn - Al forging alloy.)

Use of Magnesium Alloys:

Since many Northern locations are not easily accessible, low-weight construction facilities are at a premium. An intensive experimental stress analysis study of a 2-yard capacity, magnesium alloy bucket, used for transporting concrete was completed. The data obtained will facilitate the optimum design of a similar bucket of 5-yard capacity.

Plans for 1969

A quantity of G40.8, Grade B, structural steel plate 2¼ in. thick, has been procured for a study of the effect of mill-processing variables on mechanical properties, particularly low temperature toughness. Samples of plate will be rolled to ¼ in. thickness under controlled conditions, after soaking at temperatures from 720° to 1200°C.

Technical and scientific services will be provided for assisting in the opening of new mines, for increasing mineral production in the Territories, and for solving production problems of petroleum and natural gas. Scientific advice will be available and investigations will be undertaken as required on northern problems related to metals, minerals, fuels, petroleum, and natural gas.

DEPARTMENT OF ENERGY, MINES AND RESOURCES

GEOLOGICAL SURVEY OF CANADA

Responsibilities: The Geological Survey of Canada has the major responsibility for providing geological information, concepts, and techniques required to assist in: (1) the evaluation of the potential mineral resources and the search for mineral deposits; and (2) planning by industries and federal agencies concerned with renewable and non-renewable resources, regional development, land use, and engineering projects.

Long-term Plans

Highest priority for more than a decade has been given to the early completion of the preliminary reconnaissance study and mapping (mainly 1 inch to 8 miles and 1 inch to 4 miles) of Yukon and Northwest Territories. The early completion of this generalized but extensive investigation is needed to meet the immediate demands of the mining and petroleum industries for general information concerning all parts of the north, and to permit preliminary estimates of mineral potentials. It will also provide the information from which to select and outline the areas and problems most in need of detailed geological studies during the next or follow-up phase. The reconnaissance phase has taken a large proportion of available annual funds and this situation is expected to continue for several years. Current plans, however, are that the reconnaissance phase will be finished in a few years and that this work will be gradually phased out in favour of a steadily increasing effort devoted to the detailed study of economic areas and geological problems disclosed by the reconnaissance. Detailed plans concerning this follow-up phase will continue to be developed as the final reconnaissance information is compiled and assessed. In the meantime the more pressing economic needs are being met as, for instance, by the start in 1969 of an integrated multi-project study of the Mackenzie Delta-Arctic Plain-Beaufort Sea area of current interest for oil and gas.

Aeromagnetic surveys made by or for the Geological Survey are a supplementary method of obtaining reconnaissance geological data. It is expected that surveys of the following regions will be completed, or very nearly so, at various times before the end of 1976: Yukon Territory south of the 66th parallel; the mainland Canadian Shield in Districts of Keewatin and Mackenzie; most of Baffin Island; and most of the Polar Continental Shelf north from the Mackenzie delta.

Eighty to 90 per cent of the bedrock geology has now been mapped at reconnaissance scales, mainly 1 inch to 8 miles. Major geological operations planned to complete this initial reconnaissance within about the next five years include unmapped areas of southwest and east-central Yukon Territory; Mackenzie River basin in the vicinity of Norman Wells and east to the Canadian Shield and west to the Yukon boundary in District of Mackenzie; Southampton Island and Melville Peninsula in Districts of Keewatin and Franklin; and south-central Baffin Island in District of Franklin. Other major projects are planned for various parts of the other Arctic Islands, partly to complete and partly to upgrade the initial reconnaissance.

The principal areas planned for study during the next five years or so, to complete the reconnaissance phase of the Quaternary geology and geomorphology

investigations, include southwest Yukon Territory; Mackenzie River basin east and west from Norman Wells in District of Mackenzie; the southwestern Canadian Shield in that District; and in District of Franklin, northern Melville Peninsula, south-central Baffin Island, and most of the Arctic Islands between Banks, eastern Devon and northern Ellesmere Islands. In addition, much effort will be concentrated in the Mackenzie Delta-Mackenzie Basin area to acquire data needed in support of oil and gas development.

Increased emphasis will be placed on the study of mineral deposits and their environment as a means of developing criteria, concepts and techniques needed to assess mineral potential and guide mineral exploration.

Plans have been made to enlarge the facilities of the Survey's Institute of Sedimentary and Petroleum Geology in Calgary in anticipation of increased exploration for oil and gas and an increased need for geological information and service. Provisions were made in the 1969-70 estimates for enlargement of the oil and gas well core and sample storage facilities; and by the Program Forecast, 1970-71, for enlargement and further equipment of the Institute building in 1972-73 and 1973-74.

Review of 1968 Operations

During 1968 four parties of the Geological Survey spent the full field season in Yukon Territory and two others carried out shorter studies. Twenty-one parties spent the entire field season in the Northwest Territories and 10 parties spent shorter periods of time in that part of the North. Preliminary results of these studies are reported in the Geological Survey of Canada's Paper 69-1, Part A, published 14 January 1969.

Detailed mapping of the Skukum volcanics, begun in 1967, was completed near the West Arm of Lake Bennett, Y.T. The area is of interest because it is one of presumed cauldron subsidence with a history of explosive acid volcanism and rapid sedimentation that resulted in the accumulation of great thicknesses of tuffs, breccias, ignimbrites and conglomerates.

Field investigation of the 'Atlin Horst', a major geological structure in northwestern British Columbia-southern Yukon, was concluded. The upper Paleozoic rocks that comprise the sequence are characterized by rapid facies changes and, in order of increasing areal abundance are ultramafics, volcanics, limestones, and cherts. No deposits of economic interest were reported from the area.

In the Anvil-Vangorda district current studies were completed by examining a 10-mile-wide strip along Pelly River in Tay River map-area. Several important faults were mapped as was the continuation of Vangorda Fault southeast of Blind Creek. Although no new mineral occurrences were discovered it is felt that several bodies of highly fractured hematitic and pyritic quartz-feldspar porphyry along the southern side of Tintina Trench merit careful examination.

A study of mass-wasting processes in a mountain environment was continued in Ogilvie and Wernicke mountains. This involved the study of talus cones and proglacial rock glaciers.

Pleistocene stratigraphy carried out along Old Crow and Porcupine rivers provided data that permit a more detailed understanding of the various glacial stages in the area.

In the Northwest Territories as in the Yukon Territory, the Geological Survey's scientific program covered studies of bedrock and surficial geology as well as more detailed investigations in the field of economic geology.

Several geomorphic studies were undertaken in central Baffin Island one being directed towards developing a model for landforms associated with a proglacial lake (Generator Lake) in a 'cold-ice' environment and another to a study of recent alluvial deposits at the head of Sarvalik Fiord.

Studies were made on a variety of geomorphic processes in the Mackenzie Valley. Included were studies of the rate of movement of ice-shoved boulder pavements, the rate of mixing of Liard-Mackenzie waters, the glacial and postglacial history of the Fort Good Hope area of Mackenzie River, and permafrost conditions near Tununuk. A study was made of the lake-channel system 50 km northwest of Inuvik in order to determine the mechanisms and stages of development involved in the division of delta lakes by reversing-flow channels.

As a second phase of a continuing program devoted to the study of the sedimentology and morphology of eskers one officer spent about 6 weeks visiting several localities in the Baker Lake area.

Two major projects carried out in 1968 involved extensive use of aircraft. One, 'Operation Bylot', resulted in the mapping of 53,000 square miles of northern Baffin Island; the other, 'Operation Norman', saw the completion of the first phase of an extensive study of the lower Mackenzie River area and resulted in the mapping of about 100,000 square miles.

Operation Bylot involved 4 Survey officers as well as geological assistants and other supporting staff. Data were recorded on forms suitable for computerizing the information at a future time. The area includes the Mary River deposit of Baffinland Iron Mines and the survey located many other iron-formation showings. These are indicated on a map of the area to be found on page 172 of the Geological Survey's Paper 69-1, Part A. In addition to iron, traces of disseminated sulphide minerals were seen at many places. Coal has long been known to outcrop in the Pond Inlet area. No new occurrences were reported by the survey team.

The bedrock of northern Baffin Island comprises metamorphosed volcanic and sedimentary rocks that occur as remnants in the migmatites, gneisses and foliated granitoid rocks that underlie most of the area. An east-trending belt of meta-sediments extends from Longstaff Bluff to Home Bay on the east coast. Younger, relatively unmetamorphosed Precambrian rocks outcrop from Milne Inlet to the head of Paquet Bay. This succession is an extension of rocks previously mapped in the Admiralty Inlet area. Sub-horizontal Paleozoic strata outcrop along the western edge of the area mapped and on the islands in Foxe Basin. These rocks, together with similar strata on Melville Peninsula, were studied by another party in 1968. Although the strata on Baffin Island and Melville Peninsula are too deeply incised by erosion to be potential petroleum reservoirs, it is possible that those in Foxe Basin may have potential. Possible reservoir rocks are abundant as are potential stratigraphic traps. Potential structural traps have not been recognized.

Studies of the Quaternary geology east and north of the interior upland plateau of Baffin Island were carried out in conjunction with 'Operation Bylot'.

The other major reconnaissance program, 'Operation Norman', combined bedrock mapping, stratigraphic studies, and investigations of Quaternary deposits. In 1968 work was confined mainly to the plains area north and east of Mackenzie Mountains. No metallic minerals of economic significance were noted and it appears that the northeast part of the area, where Precambrian sediments are intruded by basic igneous dykes and sills, is the only potential area for base metal exploration. The area's greatest potential is for oil and gas. There are many potential source rocks and reservoir rocks, but, as the authors of the Geological Survey's interim report state "Unfortunately from the point of view of productive potential, these formations are widely exposed". Quaternary studies made in conjunction with Operation Norman concentrated on stratigraphy, pattern of deglaciation and levels of glacial lakes in the Great Bear Lake Basin.

A program of bedrock mapping and stratigraphic studies was carried out on eastern Devon Island and southeastern Ellesmere Island. Eastern Devon Island consists of Precambrian granitic and gneissic rocks overlain to the west by lower Paleozoic strata. Sections of this latter group were studied in some detail as were similar strata at Grise Fiord and Bache Peninsula on Ellesmere Island. Studies of the glacial geology and geomorphology of southern Ellesmere Island and Coburg Island were continued. Among other observations made is the fact that most outlet glaciers are close to their maximum extent since general deglaciation 8,000 years ago and that what retreat is visible has taken place within the last tens of years.

Studies were made of 25 of the more than 75 known copper deposits of Coppermine River area. Fifteen different associations were established, a listing given in the Report of Activities which will serve as a partial guide to those engaged in prospecting for copper in this area.

Four measured sections of Late Silurian to Late Devonian rocks were examined on Melville, Bathurst, and Cornwallis Islands in order to set up zonal standards for palynomorphs and conodont zones in the Canadian Arctic. Such information is important in world-wide correlation of rock units.

A reconnaissance was made of the Ferguson Lake and Henik Lakes map-areas, District of Keewatin, in conjunction with a study of the Hurwitz Group which had been begun in 1967. The area is mainly Archean granitic and volcanic rocks in the south (Henik Lakes) followed by a zone of metasedimentary rocks, some of which are cut by dykes of meta-diorite. The northern part of Ferguson Lake area is underlain by a gneissic complex. Some iron-formation is associated with the metasediments and very mildly radioactive pyritic quartz-pebble conglomerates are exposed in northwestern Henik Lakes areas.

A detailed study of the Hornby Bay Group, a succession of sedimentary rocks of late Precambrian age, was begun in the Dismal Lakes area. Stromatolites are common in some of the units of the group and interesting observations were made on the nature of these very early forms of life. In collaboration with the Dominion Observatory, a program was initiated for a paleomagnetic study of Proterozoic red bed basins in the western Canadian Shield.

A study of stratigraphic and structural problems was begun in Ennadai Lake area. Much of the area is covered by drift but on the northwest side of Ennadai Lake volcanic rocks intruded by granodiorite and gabbro are exposed. Some prospecting of these rocks was carried out in the past and during the 1968 field work small pyrite-bearing gossans were noted. Radioactive minerals were not detected although a scintillometer was used from time to time during the study.

The sedimentological study of the Archean Yellowknife Group, started in 1967, was completed; the revised stratigraphic column provides the basis for more accurate correlations.

In preparation for a future helicopter-supported reconnaissance of Southampton Island a preliminary examination was made of the area; one of the most interesting preliminary observations is that movement on some faults occurred after post-glacial uplift.

Detailed mapping was continued near the East Arm of Great Slave Lake. The program is designed to provide a better interpretation of the complex history of Precambrian rocks in the area and will require an assessment of structural data in conjunction with radiometric dating of rocks and minerals.

Studies designed to (1) determine the mode of development and history of valleys entrenched in the Beaufort Formation, (2) the stratigraphy of the Beaufort Formation, and (3) delineate glacial features, were carried out on northwestern Banks Island.

Aeromagnetic Surveys were completed in the Bathurst Inlet area, 761, J, K, N, O, and P and in Yukon Territory in 105J, K, N, and O. Surveys in the Queen Elizabeth Island over the Polar Shelf north of McClure Strait were also completed.

Annex A lists items published by the Geological Survey in 1968 dealing with Yukon Territory and Northwest Territories.

Plans for 1969*

Active scientific projects for 1969-70 specifically concerning Northwest and Yukon Territories will number about 100. These include a high proportion of the more extensive and expensive projects being undertaken by the Survey. About 60 will be specifically concerned with the Northwest Territories, 20 with Yukon Territory, and 20 with both Territories. Many of these, however, will be active only in their office and laboratory components as required to study and interpret the results of previous field work and prepare it for publication. Thus those that will be active in the field during part or all of the 1969 field season comprise only a part of the above total scientific program but number nearly 50.

Some 30 of these will involve field work in Northwest Territories, 10 in Yukon Territory, and 10 in both Territories. In addition to the above program aeromagnetic surveys will be made by contract in all districts of Northwest Territories.

Annex B describes most of the above provisional total scientific program for Northwest Territories and identified those projects that will have field parties. Annex C does likewise for Yukon. Some of these principal parties are described

below. It is anticipated that the Geological Survey will publish, before or early in the field season, Map 1-1969 showing the location of 1969 field parties.

In the District of Franklin a party (Project 680015) will continue from 1968, and complete, the reconnaissance study of the Precambrian rocks of eastern Devon Island and the stratigraphy and structure of the sedimentary rocks of eastern Devon Island and of the lower Palaeozoic formations of southeastern Ellesmere Island.

Another party (Project 680064), using a cache established at Eureka last year, will study the stratigraphy and palaeontology of the upper Palaeozoic rocks on Ellesmere and Axel Heiberg Islands in the Canon Fiord, Greely Fiord, Otto Fiord, and Tanguay Fiord map-areas.

In District of Keewatin a major helicopter-supported party (Project 680092) will make a reconnaissance survey of Southampton and Coats Islands. Particular attention will be paid to the correlation of the Precambrian rocks with those previously mapped in eastern District of Keewatin and on Baffin Island; and to the stratigraphy of the Palaeozoic formations and its contribution to knowledge of strata underlying much of Hudson Bay.

Three parties will share a helicopter in southeastern District of Keewatin, an area now attracting considerable economic interest as a result of uranium exploration in the Wollaston Lake area and northeastern Saskatchewan. One of these (Project 660006) will complete a study of granitic rocks mainly by mapping in the north halves of Eskimo Point and Dawson Inlet map-areas; another (Project 670004) will complete a study of the Hurwitz strata, a possible source of uranium; and the third (Project 680085) will continue the mapping of Ennadai Lake, Nueltin Lake, and the west half of Watterson Lake map-area by concentrating on the first named.

In the Precambrian part of District of Mackenzie four parties will operate with a helicopter in the Coppermine River area and will provide information needed to support the expected active mineral exploration. One (Project 600009) will examine the known copper occurrences; two (Projects 660007 and 690025) will complete between them the study of two 4-mile map-areas with particular reference to those features of the Coppermine sedimentary and volcanic rocks likely to bear on mineral exploration; and one (Project 680051) will collect material for an evaluation of biogeochemistry as an aid in finding copper orebodies in this and similar areas of northern Canada. Another party (Project 670005) will continue a study of the mineral potential and other features of the Thelon Front by confining the 1969 studies mainly to the east half of the very active Artillery Lake map-area.

The major party in western District of Mackenzie will be the second and final field phase of helicopter-supported Operation Norman (Project 670068). This season's field work will lie mainly between the 64th and 66th Parallels and extend westerly from the Canadian Shield, past Norman Wells, to the Yukon border. It will involve or support about ten geologists for all or part of the season.

In the Beaufort-Mackenzie region of the extreme northwestern District of Mackenzie and adjacent Yukon several parties will start or continue a variety of projects that together comprise the start of a program intended to provide a complete understanding of the geology of the Mackenzie Delta complex, the adjacent Coastal Plain, and the offshore Canada Basin of the Beaufort Sea. The results are expected

to provide information needed for effective oil exploration. The work will involve three Divisions of the Geological Survey of Canada and be undertaken in co-operation with the Polar Continental Shelf Project and other units of the Department. The 1969 field phase of this program will include Mesozoic-Tertiary stratigraphic and sedimentation studies in the Caribou Hills (Project 690020), biostratigraphic studies of the same area (Project 680068), structural investigations in the Herschel Island and Blow River map-areas (Project 690005) and Pleistocene, geomorphological, and seismic studies.

In Yukon Territory the major field party is that of Operation Stewart (Project 680119). The project area, a small part in District of Mackenzie, comprises Lansing, Niddery Lake, Bonnet Plume and Nadaleen River map-areas. With the aid of a helicopter it will be almost completely examined in 1969 for publication at 1 inch to 4 miles. Particular attention will be paid to features bearing on the search for mineral deposits, including those analogous to the Keno Hill and Vangorda orebodies to the west and south.

The field phases of two projects (500038 and 690026) will seek further information on the extent and rank of mineable coal in the Carmacks region as required by the Department of Indian Affairs and Northern Development.

Aeromagnetic surveys are expected to cover: in the District of Mackenzie, 12,000 square miles between Coppermine River and Great Slave Lake; in Districts of Mackenzie and Keewatin, about 20,000 square miles near Dubawnt Lake; and in District of Franklin some 25,000 square miles of central and northern Baffin Island.

ANNEX A

GSC reports and maps issued in 1968 dealing with Yukon Territory and Northwest Territories

Memoirs

Wright, G.M.

Southeastern Barren Ground, Districts of Mackenzie and Keewatin, Mem. 350 accompanied by Maps 1216A and 1217A.

Bulletins

Brown, I.C. and Henderson, J.F.

Geology and Structure of the Yellowknife Greenstone belt, District of Mackenzie, Bull. 141 accompanied by Map 1193A.

Kretz, R.

Study of pegmatite bodies — Yellowknife — Beaulieu region, District of Mackenzie, Bull. 159.

Norford, B.S. and Cowie, J.W.

Lower Cambrian faunas, Ellesmere Island; A Middle Cambrian *Plagiura* — *Poliella* faunule from Southwest District of Mackenzie, Bull. 163.

Papers

Bell, R.T.

Preliminary notes on the Hurwitz Group, Tavani and Kaminak Lake; Paper 68-36.

Bhattacharyya, B.K.

Analysis of aeromagnetic data over the Arctic Islands and Continental Shelf of Canada; Paper 68-44.

Blackadar, R.G.

Geological reconnaissance, southern Baffin Island; Paper 66-47, accompanied by Map 16-1966, 17-1966, 18-1966.

Green, L.H.

Lode mining potential of Yukon; Paper 67-36.

Handfield, R.C.

Sekwi Formation, District of Mackenzie; Paper 68-47.

Papers (Cont'd)

Heywood, W.W.

Geological notes, northeastern District of Keewatin and Melville Peninsula;
Paper 66-40, accompanied by Map 14-1966.

Hoffman, P.F.

Stratigraphy of the Aphebian Great Slave Supergroup in the East Arm of
Great Slave Lake; Paper 68-42.

Kerr, J.Wm.

Stratigraphy of central and eastern Ellesmere Island, Pt. II, Ordovician; Paper
67-27, Pt. II.

Marlowe, J.I.

Sedimentology of Prince Gustaf Adolf Sea; Paper 66-29.

Norris, A.W.

Reconnaissance Devonian stratigraphy, northern Yukon Territory and north-
western District of Mackenzie; Paper 67-53.

Terasmae, J.

Problems of Quaternary palynology in the Canadian Arctic; Paper 68-23.

A-Series (Final) Maps

Blackadar, R.G. and Trettin, H.P.

Milne Inlet (48A) N.W.T.:
Map 1235A

Blackadar, R.G. and Trettin, H.P.

Navy Board Inlet (48D) N.W.T.:
Map 1236A

Blackadar, R.G. and Trettin, H.P.

Arctic Bay — Cape Clarence (48C, 58D) N.W.T.:
Map 1237A

Blackadar, R.G. and Trettin, H.P.

Moffet Inlet (48B) N.W.T.:
Map 1238A

A-Series (Final) Maps (Cont'd)

Blackadar, R.G. and Trettin, H.P.

Phillips Creek (47H) N.W.T.;
Map 1239A

Blackadar, R.G. and Trettin, H.P.

Agu Bay — Easter Cape (47F, 57E) N.W.T.;
Map 1240A

Blackadar, R.G. and Trettin, H.P.

Berlinguet Inlet — Bourassa Bay (47G, 57H) N.W.T.;
Map 1241A

Blackadar, R.G. and Trettin, H.P.

Erichsen Lake (47E) N.W.T.;
Map 1242A

Brown, I.C. and Wright, G.M.

Christie Bay, District of Mackenzie;
Map 1122A

Brown, I.C. and Wright, G.M.

Reliance, District of Mackenzie;
Map 1123A

Preliminary Maps (in addition to those accompanying Papers)

Blusson, S.L.

Nahanni map-area (1051) Yukon Territory and District of Mackenzie; Map
8-1967

ANNEX B

**GEOLOGICAL SURVEY OF CANADA
PROVISIONAL SCIENTIFIC PROGRAM
NORTHWEST TERRITORIES
1969-70**

FRANKLIN, KEEWATIN AND MACKENZIE

Project Number	Title	Project Leader	Div.	Sect.	Prov.	NTS	Field 69-70
500336	Devonian of Alberta, British Columbia and southern District of Mackenzie	Belyea, Helen R.	ISPG	SP	Mack, B.C. Alta	82, 83, 84, 85, 94, 95	
540051	Quaternary reconnaissance, Central District of Keewatin	Fyles, J.G.	QRG	R&SP	Kee	Pts 55, 56, 65, 66	
590283	Muskox intrusion	Irvine, T.N.	CG	Pet	Mack	86 D/3, 1/14, 11, 16, 7, 3, 2,	* 1
600002	Operation Back River	Heywood, W.W.	CG	PS	Kee	56 J-O; 66 I-K. N-P; pts 57, 67	
610007	Operation Porcupine	Norris, D.K.	ISPG	SG	Mack & YK	106, 107, 116, 117	
610019	Ordovician and Silurian biostratigraphy of British Columbia, Alberta Yukon, Mackenzie, and Franklin	Norford, B.S.	ISPG	P	Frank, Mack YK, B.C. Alta	—	*
610394	Schedule of wells, N.W.T.	Belyea, Helen R.	ISPG	SP	Mack	85, 95	
620009	Operation Bathurst Inlet	Fraser, J.A.	CG	PS	Kee&Mack	Pts 66, 67, 76, 77	
620010	Quaternary reconnaissance, north eastern District of Mackenzie	Blake, W. Jr.	QRG	R&SP	Mack	66 E,L,M;; 67 B; 76 E-P; 77 A, B	
630002	Bathurst Island (Operation Bathurst)	Kerr, J.W.	ISPG	AI	Frank	68 G,H; 69 A,B; 78 H; 79 A	
630003	'Operation Grant Land' NE Ellesmere	Christie, R.L.	ISPG	AI	Frank	120 C-G; 340 C-F, H	

Project Number	Title	Project Leader	Div.	Sect.	Prov.	NTS	Field 69-70
630006	Quaternary reconnaissance, northwest Baffin Island	Craig, B.G.	QRG	R&SP	Frank	Pts 47 C-H; 48 A-D; 57 E, H; 58 A,D	
630011	Operation Nahanni	Gabrielse, H.	CG	C&PM	Mack&YK	95 E,L,M,	
630341	Paleontology and stratigraphy of the Carboniferous and Permian of northern Yukon	Bamber, E.W.	ISPG	P	Mack&YK	116 B,C E½, G-J, K E½, N E½, O,P; 117 A-D	
630415	Lower Cretaceous (Albian) stratigraphy of Peel and Snake Rivers, Yukon Territory	Chamney, T.P.	ISPG	P	Mack & YK	106; 116; 107; 117	
640003	Permo-Carboniferous stratigraphy	Nassichuk, W.W.	ISPG	AI	Frank	78 G,H; 69 B; 59 B	
640004	Quaternary reconnaissance, western Arctic Islands	Fyles, J.G.	QRG	R&SP	Frank	Pts 97-99, 88-89, 78-79, 69, 59, 49, 560, 340	*
640005	Operation Wager	Heywood, W.W.	CG	PS	Kee	46 D W½, E F N½, G N½, L,P; 47 A S½, B S½; 56 A,B,G,H,I, P; 57 A E½, D E½	
640010	Yellowknife and Goulburn rocks in the Contwoyto Lake area, N.W.T.	Tremblay, L.P.	CG	PS	Mack	75 E/11, 14	
640012	Study of the Epworth Group, Rocknest Lake area	Fraser, J.A.	CG	PS	Mack	86 G NE, H NW, I SW, J SE	
650003	Cornwallis and adjacent smaller islands	Thorsteinson, R.	ISPG	AI	Frank	58 F,G; 68 E,H	

Project Number	Title	Project Leader	Div.	Sect.	Prov.	NTS	Field 69-70
650006	Made of occurrence and origin of the iron deposits, Mary River, Baffin Island	Gross, G.A.	GMEG	MD	Frank	48 A SE	
650008	Stratigraphy, sedimentology and correlation of the Nonacho Group,	McGlynn, J.C.	CG	PS	Mack	Pts 75 E, F	
650009	Petrologic and structural study of the MacDonald fault system south of Great Slave Lake	Reinhardt, E.W.	CG	PS	Mack	Pts 75 E, 85 H	
650010	Operation Selwyn	Gabrielse, H.	CG	C&PM	Mack YK&B.C.	95 D; 105 A,H,I,P; 104 O	
650011	Quaternary stratigraphy, Mackenzie delta - Arctic coast	Fyles, J.G.	QRG	R&SP	Mack &YK	Pts 107, 117	*
660005	Tavani map-area, Keewatin	Heywood, W.W.	CG	PS	Kee	55 K	
660006	Granite studies in the Ennadai-Rankin Inlet region	Davidson, A.	CG	PS	Kee & Mack	Ps 55 W , 65 E	*
660007	Studies of the Coppermine River volcanic rocks, N.W.T.	Baragar, W.R.A.	CG	PS	Mack	Pts 86 N, O	*
660020	Structural and palaeomagnetic fabric of the Mackenzie Arc	Norris, D.K.	ISPG	SG	Mack &YK	106; 107; 116; 117	
670002	Operation Bylot	Jackson, G.D.	CG	PS	Frank	27; 37, pts 38, 48	

Project Number	Title	Project Leader	Div.	Sect.	Prov.	NTS	Field 69-70
670004	Study of the Hurwitz Group in the eastern part of the Rankin-Ennadai belt	Bell, R.T.	CG	PS	Kee	55 J,K,L; 65 I and pts G,H	*
670005	Nature of the Thelon Front	Fraser, J.A.	CG	PS	Mack	Pts 75, 76	*
670014	Operation Winisk	Norris, A.W.	ISPG	P	Kee, Man Ont&Que	32; 42; 43; 53; 54	
670016	SW Ellesmere-W. Devon Islands (Operation Grinnell)	Kerr, J.W.	ISPG	AI	Frank	49 B,C; 59 A,B,D; 58 G,H; 69 A	
670017	Upper Paleozoic and Mesozoic physical stratigraphy and biostratigraphy	Nassichuk, W.W.	ISPG	AI	Frank	49 C,F; 59 B; 79 B	
670018	Baffin Island-Foxe Basin-Melville Peninsula (Operation Foxe Basin)	Trettin, H.P.	ISPG	AI	Frank & Fee	36 I,J; 26 L; 36 N-P; 26 M; 37 A-D,F,G; 47 A,D; 38 B,C; 48 D	
670031	Quaternary reconnaissance, southern Ellesmere Island	Blake, W. Jr.	QRG	R&SP	Frank	38 G; 39 B,C; 49 A-D; 59 A,D,	
670041	VLF mapping	Becker, A.	EG	EM	Mack & Main	86 N,O; Pts 52 M, 63 P	*
670068	Operation Norman	Aitken, J.D.	ISPG	PS	Mack	86 D,E,L,M; 87 B,C; 96; 97 A-D,F; 106 A,B,G-J, O,P; 107 A,D,E	*

Project Number	Title	Project Leader	Div.	Sect.	Prov.	NTS	Field 69-70
670557	Stratigraphy and ages of Precambrian sedimentary rocks and contained aills and dykes, east coast of Canadian Arctic Islands and north and northwest Greenland	Christie, R.L.	ISPG	AI	Frank	120; 340; 560; 27-29; 37-39; 47-49; 57-59	
670576	Canadian Triassic Ammonoidea and Bivalvia	Tozer, E.T.	ISPG	P	Frank & B.C.	—	
680012	Paleomagnetic study of Proterozoic red beds in the western Canadian Shield	McGlynn, J.C.	CG	PS	Kee Mack Sask	75 E, F; 74; 85; 86; 65; 66	*
680015	Geological reconnaissance of eastern Devon Island, with additional stratigraphic studies on southeastern Ellesmere Island	Christie, R.L.	ISPG	AI	Frank	38 F,G; 48 E-H; 39 B,C, F-H; 49 A,B,D	
680032	Quaternary reconnaissance, north-west District of Mackenzie	Fulton, R.J.	QRG	C	Mack	86 C-F,L,H; 96 A-P; 87 B,C; 97 A-D,F; 106 A, B,G-J,O,P; 107 A,D,E	*
680040	Proglacial geomorphology, Generator Lake, Baffin Island	Barnett, D.M.	QRG	S&GP	Frank	Pts 27 C, 37 D	*
680042	Ekalugad outwash plain, Baffin Island	(Church, M.)	QRG	S&GP	Frank	Pts 27 A, B	
680044	Quaternary reconnaissance, northeastern Baffin Island	Hodgson, D.A.	QRG	R&SP	Frank	37 G,H; 38 A-C; pt 48 D	

Project Number	Title	Project Leader	Div.	Sect.	Prov.	NTS	Field 69-70
680046	Geomorphology of delta lakes, Mackenzie delta	(Lewis, C.P.)	QRG	S&GP	Mack	Pt 107 B	*
680047	Geomorphic processes, Mackenzie Valley — Arctic coast	(Mackay, J.R.)	QRG	S&GP	Mack & YK	Pts 85, 95, 96, 106, 97, 107, 117	*
680051	Development of biogeochemical exploration methods for metallic mineral deposits for winter use	Hornbrook, E.H.W.	OMEG	G	Mack	—	*
680057	Sedimentological study of the Hornby Group	(Donaldson, J.A.)	CG	PS	Mack	86 N ; 96 SE	*
680064	Stratigraphy and paleontology of Upper Paleozoic rocks on parts of Ellesmere and Axel Heiberg Islands	Nassichuk, W.W.	ISPG	AI	Frank	49 B,F,G,H; 340 A-D; 560 A	*
680065	Pumice on raised beaches, eastern Arctic Canada	Blake, W. Jr.	QRG	R&SP	Frank Kee, Que Nfld(Lab)	Pts 13-16, 24-27, 29, 35-39, 46-49, 57-59, 68, 69, 120, 340	*
680068	Mesozoic palynology and biostratigraphy, western and northern Canada	Hopkins, W.S. Jr.	ISPG	P	Frank Mack YK, B.C. & Alta	—	*
680080	Federal/Provincial aeromagnetic surveys	Hood, P.J.	EG	MM	Frank, Kee, Mack, YK, BC, Ont. Que. Nfld	—	*

Project Number	Title	Project Leader	Div.	Sect.	Prov.	NTS	Field 69-70
680085	Structural and stratigraphic study of the Precambrian rocks of southwestern Keewatin, N.W.T.	Eade, K.E.	CG	PS	Kee	65 B,C, G W	*
680092	Geology of Southampton Island	Heywood, W.W.	CG	PS	Kee	45 M-P, J, Pt of I; 46 A-C, F; Pts 46 D, E, G	*
680101	Conodont biostratigraphy of Palaeozoic rocks of the Arctic Islands	Uyeno, T.T.	ISPG	P	Frank	49;58;59;68;69;78;79 88;89	*
680113	Biostratigraphic study of Palaeozoic palynomorphs of the Arctic Islands	McGregor, D.C.	CG	P	Frank	49;58;59;68;69;78;79; 88;89	*
680119	Operation Stewart	Blusson, S.	CG	C&PM	Mack & YK	105 N,O; 196 B, C	*
680134	Regional distribution of gaseous hydrocarbons in the Arctic archipelago	McCrossan, R.G.	ISPG	GoP	Frank	--	*
New Proj.	Paleomagnetism of Cenozoic volcanics in Baffin Island	Symons, D.T.A.	EG	RM	Frank	16	*
do	Seismic-Beaufort-Mackenzie	Hobson, G.D.	EG	SM	Mack & Yk	106,107,117	*
do	Sedimentology and stratigraphy Hornby Bay and Upper Coppermine sediments	(Donaldson, J.A.)	CG	PS	Mack	86 N,O	*

Project Number	Title	Project Leader	Div.	Sect.	Prov.	NTS	Field 69-70
do	Stratigraphy, sedimentary paleo-currents and paleoecology of Epworth Group (Aphebian) north-central District of Mackenzie	(Hoffman, P.E.)	CG	PS	Mack	—	*
New Proj.	Slave River area, N.W.T.	McGlynn, J.C.	CG	PS	Mack	85	
New Proj.	To quarry basal Wenlochan Ostracoderm locality	Thorsteinsson, R.	ISPG	AI	Frank	—	
New Proj.	NW Melville Island	Trettin, H.P.	ISPG	AI	Frank	—	
New Proj.	Scientific Consultation at field sites	Staff Arctic Islands Section	ISPG	AI	Frank	—	*
New Proj.	Structural geology of northern Yukon Territory and northern District of Mackenzie	Norris, D.K.	ISPG	SG	Mack & Yk	107;117	*
New Proj.	Post glacial uplift SE Hudson Bay	Blake, W. Jr.	QRG	R&SP	Kee Que	34W1/2; 33NW	*
New Proj.	Erosion in permafrost environment	RS Recruit	QRG	S&GP	Mack	Pt 107B	*
New Proj.	Quaternary geology Mackenzie Mackenzie Delta Region	(Rampton, V.)	QRG	R&SP	Mack	Pts 107, 117	*

ANNEX C

GEOLOGICAL SURVEY OF CANADA
PROVISIONAL SCIENTIFIC PROGRAM
YUKON TERRITORY
1969-70

Project Number	Title	Project Leader	Div.	Sect.	Prov.	NTS	Field 69-70
510014	Wolf Lake map-area	Poole, W.H.	CG	C&PM	Yk	105 B	
580009	Operation Pelly	Roddick, J.A.	CG	C&PM	Yk	105 K,J,I,F,G	
600008	Project Klondike, Quaternary geology and geomorphology phase	Hughes, O.L.	QRG	C	Yk	Pts 115 I,J,K E1/2, N E1/2, O,P	
610007	Operation Porcupine	Norris, D.K.	ISPG	SG	Mack, Yk	106,107,116,117	
610019	Ordovician and Silurian biostratigraphy of British Columbia, Alberta, Yukon, Mackenzie, and Franklin	Norford, B.S.	ISPG	P	Frank, Mack, Yk, B.C., Alta	—	*1
630011	Operation Nahanni	Gabrielse, H.	CG	C&PM	Mack & Yk	95 E,L,M,	
630341	Paleontology and stratigraphy of the Carboniferous and Permian of northern Yukon	Bamber, E.W.	ISPG	P	Mack & Yk	116 B,C E1/2, G-J, K E1/2, N E1/2, O,P; 117 A-D	
630415	Lower Cretaceous (Albian) stratigraphy of Peel and Snake Rivers, Yukon Territory	Chamney, T.P.	ISPG	P	Mack & Yk	106;116;107;117	
640013	Mt. Haldane and Dublin Gulch map-areas	Poole, W.H.	CG	C&PM	Yk	105 M/13;106 D/4	
640016	Operation Keno, surficial geology phase	Hughes, O.L.	QRG	C	Yk	105 M N1/2;106 D/1-4	

Project Number	Title	Project Leader	Div.	Sect.	Prov.	NTS	Field 69-70
650010	Operation Selwyn	Gabrielse, H.	CG	C&PM	Mack Yk&B.C.	95 D;105 A,H,I,P; 104 O	
650012	Metallogenic study of the beryllium-tin province of the Cassiar batholith	Mulligan, R.	GMEG	MD	Yk& B.C.	105 A,B; 104 O,P	*
¹ This symbol indicates a field component							
650013	Quaternary geology, Aishihik Lake and southwestern Yukon	Hughes, O.L.	QRG	C	Yk	115 H(approx)	
650131	Quaternary geology, Snag-Kluane Lake	(Rampton, V.) ¹	QRG	R&SP	Yk	115 F E1/2, G,J,K E1/2	
660002	Atlin Horst Project	Monger, J.	CG	C&PM	Yk,B.C.	Pts 104 J,K,M,N,105 C,D	
660020	Structural and palaeomagnetic fabric of the Mackenzie Arc	Norris, D.K.	ISPG	SG	Mack & Yk	106;107;116;117	
670009	Stratigraphic-structural study of the Anvil-Vangorda district	Tempelman-Kluit,	CG	C&PM	Yk	105 K/5,6,pts of 2, 3,7,10-12	
670033	Mase wasting forms and processes in a mountain environment	(Gray, J.T.)	QRG	C	Yk	Pts 106 D,E, 116 B,G	*
670037	Mesozoic stratigraphy, Eagle Plain region, Y.T.	Yorath, C.J.	ISPG	MS	Yk	116 I,J,O,P	

¹ Brackets indicate seasonal employee or non-staff member

Project Number	Title	Project Leader	Div.	Sect.	Prov.	NTS	Field 69-70
670090	Subsurface Upper Paleozoic stratigraphy, Yukon Territory	Martin, H.L.	ISPG	PS	Yk	95 C-E;105;106 E-F, K-M;115;116	*
670281	Ultrabasic rocks of the Yukon	Findlay, D.C.	CG	Pet	Yk ¹ & B.C.	Pts 115 F,G,105 C,D,F	*
680031	Quaternary stratigraphy of Old Crow Basin and Porcupine River Valley	Hughes, O.L.	QRG	C	Yk	Pts 116 0, 117 B, C E1/2	*
680068	Mesozoic palynology and bio-stratigraphy, western and northern Canada	Hopkins, W.S. Jr.	ISPG	P	Frank Mack, Yk B.C. & Alta	—	*
680080	Federal/Provincial aeromagnetic surveys	Hood, P.J.	EG	MM	Frank, Kee, Mack, Yk,B.C, Ont,Que, Nfld	—	*
680118	Compilation of 1:1,000,000 map, MacMillan River area, Yukon	Gabrielse, H.	CG	C&PM	Yk	105;115	
680119	Operation Stewart	Blusson, S.	CG	C&PM	Mack & Yk	105 N,O; 106 B,C	*
New Proj.	Seismic-Beaufort Mackenzie	Hobson, G.D.	EG	SM	Mack & Yk	106,107,117	*
do	Quaternary geology Mackenzie Delta Region	(Rampton, V.)	QRG	R&SP	Mack & Yk	Pts 107,117	*

¹ Underscoring indicates location of 1969-70 work

Project Number	Title	Project Leader	Div.	Sect.	Prov.	NTS	Field 69-70
do	Soil development on glaciated and unglaciated terrain	Rutter N.W.	QRG	C	Yk	116 C	*
do	Structural geology of northern Yukon Territory and northwestern District of Mackenzie	Norris, D.K.	ISPG	SG	Mack & Yk	107,117	*
do	Beaufort Mackenzie Project	Yorath, C.J.	ISPG	MS	Mack & Yk	97A-F; 106M, N; 107A,B,C,D,E,F; 117A-F	*

DEPARTMENT OF ENERGY, MINES AND RESOURCES

GRAVITY DIVISION, OBSERVATORIES BRANCH

Responsibilities: The Gravity Division is responsible for regional gravity surveys in the Canadian North including the Arctic Islands, the Polar Continental Shelf and the Canadian waters of the Arctic Ocean. Data collected during these surveys are used for geophysical and geological crustal studies and for geodetic research. These data are also made available to the petroleum and mining industries and other interested parties including the Department of National Defence.

Long Term Plans

Long term plans are aimed at completion of the regional gravity survey of the Canadian North within the next decade. Results are reduced, compiled, interpreted and published in the form of maps and reports in a continuing program to release the data as quickly as possible to industry and other interested parties.

Review of 1968 Operations

Polar Continental Shelf Survey. In 1968 about 950 gravity stations were established over the sea ice covering an area of about 60,000 square miles of the Arctic Ocean and 25,000 square miles of M'Clure Strait. The free air anomalies ranged from -50 mgal in M'Clure Strait to 100 mgal on the continental margin. The latter anomaly which marks the transition from continental to oceanic crust is the third elongated positive anomaly discovered in this region.

In Baumann Fiord, Ellesmere Island, 163 gravity stations were observed during 1968 over the sea ice.

The first successful radar echo soundings through glacier ice in Canada on an outlet glacier of the Penny Ice Cap in Baffin Island have been reported to 'Glaciology' by J.R. Weber and P. Andrieux. An unmodified 440 MHz SCR-718 radar altimeter, of the type which is readily and inexpensively available on the surplus market, was used. The radar soundings were generally in agreement, within the range of the reading accuracy of the oscilloscope (± 15 m), with those depths obtained seismically, gravimetrically, and by the electric resistivity method. The minimum and maximum recorded depths were 45 m and 550 m, respectively. The pip positions on the standard oscilloscope were recorded visually. This recording method was not satisfactory, but for future use the instrument can easily be modified to incorporate a larger oscilloscope with continuous photographic recordings. The relatively high frequency allows the use of smaller antennas and results in better resolution of the bedrock surface.

A study of geophysical surveys carried out over the Queen Elizabeth Islands and Arctic continental margin by J.R. Weber, L.W. Sobczak and E.F. Roots is nearing completion. The gravity anomalies can generally be explained by surface geology but a large positive anomaly on the continental margin is attributed to the transition from continental to intermediate crust which may or may not be oceanic.

J.R. Weber reports that analysis of the multidisciplinary studies carried out in the vicinity of the North Pole in 1967 have shown that (1) the average free air gravity anomaly in the immediate neighbourhood of 90° N is -22 mgal, (2) the amplitude of the ocean wave is of the order of tenths of a millimeter, (3) there is a good correlation of the drift path of the flow station and the winds and ocean currents, (4) the flow station reached speeds up to 1 km/hr as measured by sonar ranging from an acoustic transponder on the ocean floor. The slope of the ocean water compared to the equipotential surface of the earth was measured twice over a 30-hour period using a theodolite. The slope measured 8 arc seconds on both occasions but the azimuth had changed by 50°. A hydrostatic level is presently being developed that will continuously record ocean tilt.

Plans for 1969

Beaufort Sea and Mackenzie Delta. In 1969 gravity coverage will be extended over the Beaufort Sea and Mackenzie Delta as part of the continuing programme to map the North. The survey will cover an area of about 60,000 square miles. During the survey the Differential Omega System (V.L.F.) will be evaluated in terms of position accuracy, signal strength and stability.

Project North Pole 1969. J.R. Weber will continue the programme of multidisciplinary studies in the vicinity of the North Pole initiated in 1967. A fifteen man party will carry out investigations in gravimetry, geodesy, physical oceanography, astro and radio navigation and meteorology. The operation is jointly sponsored by the Dominion Observatory and the Polar Continental Shelf Project. The programme is briefly summarized as follows:

1. *Gravity measurements.* P.J. Winter and R.M. Iverson will make gravity measurements in the Lincoln Sea to 90° N and across the Lomonosov Ridge at 10 km intervals. Gravity measurements will also be made along the drift path of the floe station. Depth soundings will be made at the same time.

2. *Navigation.* R.L. Lillestrand and A. Geiger will be responsible for all aspects of navigation. Five different navigational aids will be in use (a) astronavigation (Lillestrand method) (b) satellite navigation (Magnavox) (c) radio navigation using VLF Differential Omega System (d) sonar ranging from acoustic transponders on the ocean floor (e) acoustic ranging by recording travel time between seismic shot and listening station.

3. *Deflection of Plumblines.* Lillestrand and Geiger will be responsible for determining the deflection of the plumblines from the vertical at every satellite pass under optimum viewing conditions.

4. *Current Measurements.* Ocean currents will be measured by J.R. Weber, D. Finlayson, L. Colby and M.D. Pearlman.

5. *Water Temperature and Pressure Measurements.* Water temperature and pressure will be recorded every 30 km by Pearlman, Finlayson and Weber.

6. *Meteorological Observations.* Wind speed, atmospheric pressure and temperature will be recorded continuously by Colby.

7. *Drift Path and Rotation.* Lillestrand and Geiger will investigate drift path including translational and rotational motion, and fine structure of ice drift.

8. *Sonar Measurements.* Pearlman will investigate the average vertical velocity of sonar waves through ocean water and bottom profiling.

9. *Ocean Tilt Measurements.* Weber, Lillestrand and Colby will investigate ocean tilt using hydrostatic levelling and a tiltmeter.

10. *Ocean Wave Studies.* Weber and Iverson will carry out ocean wave studies using three recording gravity meters in tripartite array.

OBSERVATORIES BRANCH – SEISMOLOGY DIVISION

Responsibilities: The Division of Seismology operates seismic observatories at Alert, Mould Bay, Resolute, Coppermine, Frobisher, Inuvik, Yellowknife, Baker Lake, Churchill, Great Whale River, Schefferville, and a large seismic array near Yellowknife. The seismicity of the Arctic is studied: in addition, research is conducted on earthquakes recorded in the Canadian North. In cooperation with the Polar Continental Shelf Project, crustal seismic refraction studies are undertaken. Geothermal research is also carried out through the Canadian North.

Long Term Plans

It is hoped to install a second-order seismic station for local seismicity studies at Whitehorse. The Division intends to continue its studies of the crust and upper mantle in the Canadian North, and to continue geothermal research from the ice, in lakes and in boreholes abandoned by oil companies and drilled for the PanArctic Project.

Review of 1968 Operations

The seismic stations listed above, except for Inuvik, operated continually as did the seismic array. Equipment was modernized at a number of stations, including the array. Inuvik observatory was commissioned at the end of the year and is operational in early 1969.

Geothermal measurements were made near Prince Patrick Island, near Yellowknife, in the interior of the Yukon Territory and on Ellesmere Island.

Plans for 1969

The seismological observatory program will be continued. A program of updating instrumentation at Yellowknife will continue. Geothermal research is planned on a continuing basis in the N.W.T. and the Yukon.

A major deep seismic reflection sounding experiment is planned for July 1969 in the Yellowknife-Fort Rae area.

GEOMAGNETISM DIVISION – OBSERVATIONS BRANCH

Responsibilities: The Geomagnetic Division measures and charts the magnetic field, operates a network of magnetic observatories, and conducts research into the structure of the upper atmosphere and solid earth by geomagnetic methods.

Long-term Plans

To reoccupy magnetic repeat stations at 3 to 5 year intervals; to conduct three-component airborne magnetic surveys at 5 to 10 year intervals; to operate permanent and temporary magnetic observations.

Review of 1968 Operations

Six magnetic stations were reoccupied in the District of Franklin, to determine the magnetic secular variation. Magnetic observatories operated continuously at Alert, Mould Bay, Resolute, Great Whale River, and Baker Lake. Paleomagnetic collections were made in the Great Bear Lake and Baker Lake regions.

Plans for 1969

Magnetic stations will be reoccupied in the Baffin Island region. A three-component airborne magnetic survey will be conducted at a 20-mile line-spacing in the southwestern Northwest Territories and Yukon. Temporary magnetotelluric recording stations will be established on Meighen Island, Ellesmere Island, and the north coast of Greenland, to study the structure, temperature and composition of the deep crustal layers. The five permanent magnetic observatories listed above will continue in operation.

DEPARTMENT OF ENERGY, MINES AND RESOURCES

MINERAL RESOURCES BRANCH

Responsibilities: The Mineral Resources Branch of the Department of Energy, Mines and Resources undertakes mineral economic research and mineral policy development on a regional, national, and international basis, in the context of the national interest. Branch activities include mineral resources and economic development in northern Canada, specifically: the provision of advice on and participation in the policy-formulation, program-planning, and project-evaluation processes of the Department, interdepartmental committees, and other departments including the Department of Indian Affairs and Northern Development. The Branch also administers the Emergency Gold Mining Assistance Act and recommends on mineral matters under the Income Tax Act of the Department of National Revenue.

Long-Term Plans

To continue to advise on, participate in, and undertake federal government programs and activities that are related, wholly or in part, to mineral resource utilization and northern economic development.

Review of 1968 Operations

The Mineral Resources Branch continued as adviser to the Department of Indian Affairs and Northern Development and as participant in interdepartmental activities concerned with northern economic development. Previous special studies concerned with regional economic mineral appraisals, mineral industry development opportunities, and possible infrastructure investment requirements were re-assessed as changing circumstances developed. For example, the Baffinland iron ore project, the Anvil lead-zinc project, and the Pine Point project were reviewed with reference to their economic feasibility within the context of alternative production and transportation possibilities and the national and international market environment.

As a member of the Interdepartmental Advisory Committee on Northern Development, the Interdepartmental Committee on Northern Roads, the Interdepartmental Committee on Pacific Coast Transportation, the Branch prepared special studies such as one concerning Canadian access requirements to tidewater on the Pacific Ocean. The study included a detailed examination of the outlook for the existing mineral industry, a regional mineral-potential appraisal, transportation requirements, and physical aspects of access of tidewater. A study of the economic mineral potential in the Yukon Territory and the District of Mackenzie formed the basis for Branch participation in the development of a 10-year, \$100 million northern roads program. Recommendations were also provided on matters related to the Canada-Alaska ferry terminal agreement and the possible usage of foreign shipping in the Canadian Arctic. A critique of a consultant's study, "The Yukon Economy, Its Potential for Growth and Continuity" was provided to the Department of Indian Affairs and Northern Development. Reports were also provided on mineral property evaluations and field investigations to northern mineral establishments by mineral economists. Program planning and research were initiated on a major comprehensive

study relative to economic development and transportation requirements in northern British Columbia and the Yukon. The Department's responsibility for national energy policies required particular attention to petroleum developments in the Arctic; this involved the Branch on departmental and interdepartmental task forces.

The Branch administers the Emergency Gold Mining Assistance Act, a national program introduced in 1948 to provide financial assistance to marginal gold mines encountering rising production costs under a fixed international price and to allow a more orderly adjustment of dependent communities. Field inspections were made to placer-gold and lode-gold operations in the northern territories. Approximately \$950,000 was payable to four lode mines in the Northwest Territories and \$25,000 payable to 20 placer operators in the Yukon for 1968. The Branch also provides advice to the Department of National Revenue with respect to tax benefits (i.e., three-year tax exemption, depreciation, and depletion) under the Income Tax Act. Field investigations are made for this purpose when necessary and recommendations were made with respect to 23 mining operations. The Branch also began a study of the proposed new Yukon Minerals Act.

Branch involvement in mineral economic research and mineral policy development at the regional, national, and international level is such that mineral industry corporations and related institutions seek advice on economic, technical, and administrative matters concerned with operating in the north.

Plans for 1969

The Mineral Resources Branch will continue to undertake mineral economic studies and develop policy recommendations to facilitate northern economic development as an adviser to the Department of Northern Affairs and Northern Development, as a participant in related interdepartmental committees and task forces, as administrators of the Emergency Gold Mining Assistance Act, and as adviser to other departments such as the Department of National Revenue.

Specific studies under way or initiated early in 1969 concern: economic development and transportation requirements in northern British Columbia and the Yukon; northern energy policy; policy problems and alternatives in declining mineral-based regions; and the proposed new Yukon Minerals Act.

In addition to regular field investigations and inspections, Branch officers participate in conferences concerned with mineral economics and northern development. An officer will participate on a northern transportation panel at the Third Northern Resources Conference in Whitehorse.

The Branch attempts to provide the necessary flexibility in its programs to meet unforeseeable projects related to its responsibilities for northern development. However, the 1969 program specifically makes provision for initial research on a project to assess the economic mineral potential and possible transportation requirements in a region defined to include parts of the northern Prairie provinces and the southern parts of the Northwest Territories.

DEPARTMENT OF ENERGY, MINES AND RESOURCES

MARINE SCIENCES BRANCH

Responsibilities: To carry out hydrographic and oceanographic surveys in Arctic Waters.

To produce and distribute charts, sailing directions, tide tables, and reports based on survey activities and information from all sources.

To carry out research on the oceanography of the region.

Long-Term Plans:

To complete standard hydrographic surveys of the arctic coasts as soon as possible and to continue the publication and maintenance of up-to-date charts of the region. To carry out reconnaissance surveys where requirements exist for charting ahead of the regular surveys. To maintain reliable sailing directions as published in the Pilot of Arctic Canada. To publish tide tables to meet the need of northern navigation and to carry out research to enhance our knowledge of tides in northern waters.

To gather and interpret data on oceanographic and marine geophysical parameters with the object of understanding processes affecting the water column and the properties of the crust underlying the channels and the seas.

Review of 1968 Operations:

The Canadian Hydrographic Service carried out the following field activities during the 1968 season:

The CSS Richardson did soundings in the approaches to Sachs Harbour as well as in Liverpool Bay and the approaches to Tuktoyaktuk.

Two hydrographers were assigned to the CCGS Camsell and completed surveys of the approaches to Coppermine and McClintock Bay and obtained track soundings while on passage.

Two hydrographers assigned to the CCGS d'Iberville carried out a survey of the head of Wakeham Bay in the Hudson Strait, completed the survey of Resolute Bay, started a reconnaissance of Allen Bay, which may be used as an alternative to Resolute Bay. Track soundings were obtained in Viscount Melville Sound then a series of traverses were made of the continental shelf off Baffin Island and the Labrador Coast.

Two new charts 7760, St. Roch and Rasmussen Basins and 7770, Spence Bay and Approaches, and four new editions of Western Arctic charts were issued. New additions were published of the Pilot of Arctic Canada, Vol. II and III and the Mackenzie River Pilot.

The Frozen Sea Research Group established the Greely Fiord Base during August and September of 1968 and completed two Arctic Research Units. In addition, a field investigation was carried out at Cambridge Bay during Feb.-March of 1968 to

obtain data required in the investigation of sea ice formation and water structure under sea ice (detailed methods and findings are explained in the Frozen Sea Research Group submission to the Canadian Committee on Oceanography and contained in the Annual Report-1968 "Working Group on Ice in Navigable Waters").

Plans for 1969:

The CSS Richardson will work in conjunction with hydrographers assigned to the Polar Continental Shelf Project on a detailed survey of the Beaufort Sea.

Hydrographers will again be assigned to the CCGS Camsell for survey work particularly to attempt a detailed survey of Paulatuck.

A hydrographic team will be assigned to the CCGS Sir John A. MacDonald in the Eastern Arctic to gather as much data as possible during the proposed probes to be made of the North-West Passage while supporting the American tanker Manhattan.

Work is now underway to reconstruct almost all of the Arctic charts. The first of these new charts, 7832, Eglinton Island to Cape Kellet, covering M'Clure Strait and its Western approaches, will be available for the 1969 navigation season. The next four charts, showing the work carried out by the Polar Continental Shelf Project in the Queen Elizabeth Islands are planned for completion by 1970.

New editions are planned of Charts 5003, Southern Hudson Bay, 7000, Arctic Islands (this will show the full extent of the sounding coverage), 7533, Resolute Bay, and 7678, Coppermine.

The Frozen Sea Research Group plans to improve the present air strip at Greely Fiord (providing the necessary equipment is available) and continue the work of the Arctic Research Units in this area. In addition five of the Group are scheduled for a field season at the base. The program is to carry out a testing program similar to that of 1968 at Cambridge Bay, N.W.T. and the ice water interface and water structure at the two sites will be compared. Scientific work will also be carried out to obtain relatively complete temperature-salinity records of surfaces over the freeze-up period.

Employees:

The Marine Sciences Branch foresee no requirement for local labour, skilled or unskilled, only permanent employees of this branch will go North.

DEPARTMENT OF ENERGY, MINES AND RESOURCES

INLAND WATERS BRANCH – Water Quality Division

Responsibilities: The Water Quality Division designs and operates water quality networks, monitoring and surveillance programs and pollution surveys on surface waters in Northern Canada for federal, territorial, municipal, industrial, mining and other uses and for the advancement of approved government policies and objectives in water resources research and management.

Long Term Planning

In cooperation with federal and other government agencies, plans are being made to extend water quality networks and pollution survey programs to cover all major surface waters and pollution problem areas in Northern Canada in accordance with industrial and mining development and population growth.

Review of 1968

Operations

Water quality networks were expanded from 8 to 16 sampling stations in the Yukon Territory and from 8 to 21 in the Northwest Territory to form a 37 station network in Northern Canada. These stations are established on key rivers and streams in the territories and coincide for the most part, with hydrometric stations. Sampling ranged from monthly at about 12 stations to thrice per year at all other stations. Samples were analyzed for physical and chemical parameters including colour, turbidity, pH, conductivity, hardness, alkalinity, major ions, heavy metals and organics.

During the year, in cooperation with the Department of Indian Affairs and Northern Development, water quality monitoring programs were established on streams in and around eight mining developments in Northern Canada to study the effect of mining operations on surface waters in these areas.

Plans for 1969

Plans are underway to expand water quality networks to about 75 sampling stations on principle rivers and streams in Northern Canada to coincide with hydrometric stations. Mine wastewater monitoring will be extended as mining development expands.

In cooperation with the University of Calgary and other government agencies, the Water Quality Division is planning to participate in a Mackenzie River Basin study project during the summer of 1969 by conducting a detailed water quality study of the river system through field surveys and laboratory analyses.

Employees

The Water Quality Division has no employees in Northern Canada for carrying out its programs. Samples collections are arranged through the Water Survey of Canada or through the Department of Indian Affairs and Northern Development.

DEPARTMENT OF ENERGY, MINES AND RESOURCES

WATER SURVEY OF CANADA

INLAND WATERS BRANCH

General

The Water Survey of Canada is primarily responsible for the collection, computation and publication of surface water data for the major portion of Canada working in close co-operation with the Provincial governments and other Departments of the federal government. In addition to the operation of a network of gauging stations for the above purpose, the Water Survey co-operates with other Divisions of the Inland Waters Branch in the collection of water samples for water quality analysis and the operation of observation wells for groundwater studies. It also operates and maintains water level recording stations to provide information on tides and water levels for the Marine Sciences Branch. To support its operational activities the Water Survey of Canada carries out studies in hydrology and hydraulics, in instrument development and procedural methodology; and operates a calibration facility for the rating of instrumentation used in its work.

The emphasis for the future, as far as the North is concerned, will be to expand the network of gauging to as many rivers as possible to produce an accurate assessment of the northern water resources including not only water levels and streamflow information but also that for sediment transport as well. At the same time the Water Survey of Canada, through its co-operative arrangements with other Divisions of the Inland Waters Branch and of the Marine Sciences Branch, will operate commensurate data collection points for water quality, ground-water levels and tides and water levels – the latter for the production of tide tables and navigational charts. To make such expansion plans feasible District or Regional Offices are proposed for establishment at Whitehorse, Y.T. and Fort Smith, N.W.T.

1968 Operations

The Water Survey of Canada operated its network of some 90 hydrometric gauging stations in the Yukon and Northwest Territories through offices at Whitehorse, Y.T., Fort Smith and Baker Lake, N.W.T., all sub-offices of the three Western District Offices. Water quality samples were collected at some 40 locations and tides and water level records at 6. Preliminary assessment programs of sediment sampling of selected rivers was also started.

The more significant events of the year were the decisions to establish District or Regional Offices at Whitehorse, Y.T. and at Fort Smith, N.W.T., and the completion of arrangements whereby the Department of Indian Affairs and Northern Development and the Water Survey of Canada would develop closer co-operation and liaison with respect to the establishment of new hydrometric stations and share the costs of construction, operation and maintenance.

1969 Operations

In co-operation with the Department of Indian Affairs and Northern Development, reconnaissance and/or construction will be undertaken for 12 new hydrometric

stations. Reconnaissance will be carried out to select suitable locations for the launching of sediment survey programs on major rivers. At the same time arrangements are being made for the expansion of the Water Quality network with the objective of obtaining water quality samples at all hydrometric gauging stations.

It is anticipated that a district or regional office will become operational at Fort Smith early in the 1969-70 fiscal year to serve the Northwest Territories. Later in the year a similar office is expected to be opened at Whitehorse to serve the Yukon Territory.

HYDROLOGIC SCIENCES DIVISION

INLAND WATERS BRANCH

Responsibilities: To provide and disseminate data on quantity and quality in Canadian rivers, lakes, aquifers, snow and ice; to develop new concepts and acquire new knowledge pertaining to the behaviour and occurrence of water in the hydrological cycle; to provide advice to the Federal Government on technical aspects related to the management of interprovincial and international waters; to provide an economic basis for pollution control; to ensure appropriate use and conservation of Canada's freshwater resources both quantitatively and qualitatively; to foster increased knowledge in the domain of water.

REPORT ON ACTIVITIES IN THE NORTH 1968 – GLACIOLOGY SUBDIVISION

Long-term Plans

Through the Hydrological Sciences Division, the Branch plans to continue routine observations on selected Arctic glaciers. The climatological study will be modified to emphasize the relationship between sea ice distribution and environmental conditions over the adjacent land masses.

New projects will focus on problems related to mineral exploration and exploitation in glacierized regions, e.g. determination of subglacier topography, characteristics of the rock-ice interface and problems related to test drilling through glaciers. Increased attention will be given to the study of floating glacier tongues and iceberg production from calving glaciers.

Review of 1968

Operations

The Hydrologic Sciences Division continued glaciological studies on Per Ardua Glacier, Ellesmere Island, and on the Barnes Ice Cap and Decade Glacier, Baffin Island. A project on the Devon Island Ice Cap was contracted out to the Arctic Institute of North America. Plates for terrestrial photogrammetry were obtained from the Meighen Island Ice Cap to study surface movement.

In the Yukon Territory, glacio-hydrological studies were made at the 'Fox Glacier' in the St. Elias Ranges, and a preliminary study of the Steele Glacier surge was presented at a symposium at St. Hilaire, P.Q.

In Ottawa work continued on: 1) The 1:1,000,000 map series showing the distribution of glaciers in the Eastern Arctic and the series (4 maps) went to press at the end of the year; 2) The Glacier Inventory of Canada which will tabulate all Canadian glaciers and provide data on their size, altitude, orientation, volume, etc. The inventory for Axel Heiberg Island was completed and the Baffin Island glaciers are now being indexed and tabulated; 3) A study of the moisture flux pattern over the Eastern Arctic; and a report on this project was published.

Plans for 1969

Glaciological studies will continue on Per Ardua and Decade glaciers and on the Barnes Ice Cap, with a concentration of field activities in May-June. The Barnes Ice Cap work will comprise an extensive survey of ice depths. The Devon Ice Cap work will also continue.

A new project will be started on Axel Heiberg Island in cooperation with McGill University. The Glacier Inventory work and the climatology studies will both continue as office projects.

DEPARTMENT OF ENERGY, MINES AND RESOURCES

POLICY AND PLANNING BRANCH

Responsibilities: Through the revised Resources and Technical Survey Act of 1966, the Department of Energy, Mines and Resources has been assigned responsibility for co-ordinating, promoting and recommending national policies and programs with respect to energy, mines and minerals, water and other resources. In particular, the Prime Minister assigned to the Department special responsibilities for research and studies related to water in the Canadian North.

Long-term Plans:

The co-ordination of federal programs and activities for the conservation and development of water in the North and in the Prairies to assist in the orderly and effective development of the water resources in the national interest.

Review of 1968:

Operations: The Branch provides the Secretariat for the Interim Inter-departmental Committee on Water (ICW) which advises the Minister respecting the formulation, co-ordination and implementation of all federal water programs. Inter-departmental co-ordination to assist the preparation of a Memorandum to Cabinet to draft a Northern Water Rights Act was carried out through the ICW.

Plans for 1969: The continuation of the Secretariat for the Interim Inter-departmental Committee on Water and the co-ordination of federal water programs and activities.

Employees: Nil

DEPARTMENT OF ENERGY, MINES AND RESOURCES

MAPPING AND SURVEYS BRANCH – GEODETIC SURVEYS OF CANADA

Responsibilities: The responsibilities of the Geodetic Survey in the north are to provide a framework of precise horizontal and vertical control which serves as the basis for surveys of lesser accuracy which may be carried out by other government agencies or by private enterprise. These precise surveys also provide basic information for research in the solid earth science. The Geodetic Survey is also responsible for surveys to provide control for mapping in the north and also to provide special surveys as required for the development work of other agencies.

Long-term Plans:

The long range plans for northern operations include the densification of the precise horizontal control framework and the provision of control for 1/50,000 mapping. These operations will take place simultaneously in the regions being controlled using Aerodist, which is an airborne survey system capable of carrying out both functions in the most economical manner. Special surveys and control surveys for mapping will also be required to supply mapping which is urgently needed and cannot be scheduled for inclusion in the aerodist program.

Review of 1968

Operations

- (1) Control for 1/250,000 mapping of islands in northern Hudson Bay and Hudson Strait was established. Two survey officers were engaged with support from ice breakers of the Canadian Coast Guard.
- (2) One major horizontal control party was engaged in northern Quebec in extending our framework south from Great Whale River to Fort George and thence southeast to connect with existing control at the north end of Mistassini Lake. This operation involved 4 permanent staff members, 12 casuals and two chartered helicopters for a period of 3½ months.
- (3) A line of first-order levels was completed from Montreal Point to Cross Lake, Man. to establish control for 8 water gauges- requested by Water Survey of Canada.
- (4) In 1968, Aerodist operations established 25 new first-order and 9 second-order geodetic horizontal control stations in an area of northern Alberta and in the Northwest Territories between latitudes 57°N and 63°N, and between longitudes 110°W and 124°W. Eleven Shoran and provincial stations were tied in, and control for mapping was established by aerodist controlled photography over approximately 150,000 square miles in the area.

In addition, the Autotape helicopter hover system was used in control densification to establish 38 horizontal control points in an area bounded by latitudes 61°N and 62°N, and longitudes 120°30'W and 123°30'W.

Plans for 1969

- (1) Mapping control operations for 1/50,000 mapping are planned in northern Manitoba, northern Quebec, and Labrador. This work will be carried out using rotary and fixed wing aircraft.

Levelling operations are in progress in northern Ontario to provide vertical control information for water resources studies and for mapping.

- (2) A line of first-order levels will be established from Esker to Sail Lake in Labrador-Churchills Falls area to provide vertical control for mapping, engineering and hydraulic purposes. First-order levels will be established in Thompson, Man. area to provide control for mapping, engineering and hydraulic projects.
- (3) The aerodist operations is to continue extension of the primary geodetic horizontal control net of 1968 north westerly along the MacKenzie River to the Yukon-Alaska boundary at the Arctic Ocean; to establish horizontal control by aerodist controlled photography for 455 map sheets at a scale of 1/50,000 in the area; to tie-in 12 Shoran stations to second-order accuracy; and to establish position ties for 7 DOT Navigational Aids.

DEPARTMENT OF ENERGY, MINES AND RESOURCES

MAPPING AND SURVEYS BRANCH

LEGAL SURVEYS DIVISION

Responsibilities: To manage and execute surveys to enable land or resources transactions involved in the administration and development of public or other lands.

Long-term Plans

The long-term plans of this Division are dependent upon the planning and development programmes of other government departments. It is planned to execute subdivision surveys in each settlement in the North, the amount of yearly work being determined by the development of these settlements by the Department of Indian Affairs and Northern Development. Similarly, surveys of group lots, camp sites, and other parcels will be executed as highways are built by the Territorial governments in the North. Other work such as the laying out lots for airstrips, will depend upon the progress made by the Department of Transport in this field. It is intended to establish Co-ordinate Control Surveys in the major settlements of the North.

Review of 1968 Operations

Yukon Territory — 1 parcel was surveyed at Whitehorse, 1½ miles of road were surveyed at Carmacks, 16 miles of traverse were surveyed at Carcross, completing the Carcross-Wheaton River control network commenced in 1967. The 115 monuments of the Whitehorse Co-ordinate Control Survey were inspected, and reference bars were placed for 9 of the monuments. An additional 9 parcels of land, for campgrounds, building lots, transmitter sites, and a fire training area, and a 21-lot subdivision in Riverdale Subdivision, Whitehorse, were surveyed by a private surveyor under contract to the Department.

Northwest Territories — Subdivision surveys were executed at: Frobisher Bay (135 lots), Grise Fiord (57 lots), Broughton Island (28 lots), Pangnirtung (10 lots), Baker Lake (261 lots), Hay River (18 lots), Fort Smith (11 lots) and Fort Simpson (14 lots). A total of 14 parcels of land, to be used for campsites market gardening, and as a beach, were surveyed in the vicinity of Prosperous Lake, Reid Lake, Pontonn Lake, Fort Providence, Hay River and Yellowknife. Surveys to locate the position of non-directional Radio beacons for the Department of Transport were made at Frobisher Bay (4 beacons), Resolute Bay (2 beacons), Grise Fiord (1 beacon) and Pangnirtung (1 beacon). Soil samples were taken for a proposed airstrip at Grise Fiord. In addition, subdivisions at LacLamarte (6 lots) Tuktoyaktuk (121 lots), Whale Cove (60 lots) and Eskimo Point (37 lots) and 6 parcels of land at Yellowknife and Hay River were surveyed by private surveyors under contract to the Department.

Plans for 1969

Yukon Territory — Extension of the Whitehorse Co-ordinate Control Survey, placing 20 new monuments, and establishing reference bars for 125 monuments.

Northwest Territories — although our final programme for the Territories is not yet complete, it will include subdivision surveys at Frobisher Bay, Lake Harbour, Clyde River, Hall Beach, Resolute Bay, Cambridge Bay and Coppermine, and a number of surveys in connection with public campgrounds, roads and land sales, mainly in the southern part of the District of Mackenzie.

DEPARTMENT OF ENERGY, MINES AND RESOURCES

POLAR CONTINENTAL SHELF PROJECT

Responsibilities: To carry out a long-term investigation of the continental shelf region lying north of the Canadian mainland and north and west of the Canadian Arctic Archipelago, including the sea floor and the Earth's crust and mantle beneath it, and the waters above it; together with the islands of the archipelago, the straits and sounds between the islands, and the adjacent mainland where relevant. The investigations comprise mainly those fields of survey and research for which the Department of Energy, Mines and Resources is responsible in other parts of Canada, wherever such study is not more economically and efficiently pursued as a separate self-contained operation; but it is also designed to include or to support worthwhile researches in fields outside those normally undertaken by the Department, if such researches could not otherwise be carried out. An important function of the Project is to co-ordinate and to arrange for mutual or concerted action by various agencies whose diverse specialties or capabilities can be brought to bear on different but related aspects of a major Arctic problem or critical area of study; and to provide continuity of planning and operation for various studies whose separate activities are short-term and focussed on individual problems. Emphasis is placed on field research and survey, but basic laboratory or theoretical research is carried on as needed to aid in the investigations, or in the interpretation of field data; and equipment or technique development or experimentation is carried on as relevant. In addition, the facilities of the Project are made available, under certain conditions, to approved university and other non-Government research groups.

Long-term plans:

The field survey and research activities will eventually cover all the Canadian sector of the arctic continental shelf of North America, those parts of the Arctic Ocean basin that are of interest to Canada and which can be reached with available logistics resources, and those parts of the Arctic Archipelago and arctic mainland not investigated by other agencies in the particular fields of interest to the Department of Energy, Mines and Resources. It is intended that the programme co-ordinating and the logistics support functions of the Project shall be made available, where appropriate and approved, to scientific activities of interest to the Government of Canada in any part of Arctic Canada. From 1959 to 1968 work has been concentrated in the region between Meighen Island and Banks Island, extending about 250 kilometers out to sea and the same distance back into the archipelago; but individual programmes of survey and research have been carried out throughout all the Queen Elizabeth Islands, and extended to the Mackenzie River delta and Beaufort Sea in the southwest and northern Greenland in the northeast.

Review of 1968 Operations:

Field activities were carried out from late February to early November, and were co-ordinated mainly from Mould Bay, on Price Patrick Island, and from Resolute,

Cornwallis Island. Approximately 100 persons were engaged in investigating the region of the continental shelf west of M'Clure Strait, and the adjacent islands and straits. Other work ranged over the Arctic Ocean from Beaufort Sea to Lincoln Sea, in the interior of many of the Queen Elizabeth Islands, and in the Mackenzie River delta region. Supporting activities connected with transport and construction engaged for brief periods about forty people in addition to those employed directly on the field investigations and surveys.

In addition to the Department of Energy, Mines and Resources, the following agencies were involved in or received assistance from the 1968 programme of the Polar Continental Shelf Project:

Department of Agriculture
National Museums of Canada
Department of National Defence
Arctic Institute of North America
University of British Columbia
University of Michigan
McGill University
Ohio State University
McMaster University

The following is a summary of the work done in 1968 in the major scientific fields:

Aeromagnetic Survey

Measurements of the total residual magnetic field as recorded from a height of 330 meters above the surface were made over the continental shelf and continental slope west of Prince Patrick Island and M'Clure Strait, and over western M'Clure Strait. Approximately 39,000 line kilometers were flown with Decca Lambda position control, covering an area of 142,000 square kilometers for mapping at a scale of 1:250,000.

Geodetic and Topographic Surveys, Position Determination and Control

Difficulties in interpreting some of the geophysical measurements made in 1967 led to a careful examination of the accuracy of positions determined by the Decca Lambda system offshore on the ice-covered ocean. A programme of Decca calibrations and accuracy checks was carried out in 1968, in which the latitude and longitude of 28 stations distributed over the area of seaward coverage of the Decca system out to a distance of 300 kilometers, were determined accurately by means of repeated solar observations and compared to the position as determined electronically by Decca. This is believed to be the first large-scale test of the accuracy of low frequency electronic positioning over an ice-covered ocean surface.

Geology, Marine

The programme in submarine geology has been designed to provide information on the character and stratigraphy of the sediments on the floor of the seas surrounding the islands of the archipelago, and covering the continental shelf and continental slope. Samples of the bottom sediments were obtained offshore from the western entrance to M'Clure Strait and adjacent parts of the continental shelf. These samples

and collections are being studied in the laboratory for evidence of their age, source, conditions of transport and sedimentation, indications of change in sea level, and variations in climate in the geologically recent past.

Geology, Terrestrial

Logistic support was provided to parties from the Geological Survey of Canada undertaking detailed palaeontological and stratigraphic studies of the Paleozoic rocks on Bathurst Island and Melville Island, and to a study of the surficial and glacial geology of northern Banks Island.

Geomagnetism

The Polar Continental Shelf Project provided the field support for a repeat measurements of the magnetic field by the Dominion Observatories at permanent magnetic stations at Cambridge Bay, Grise Fiord, Holman Island, Inuvik, Isachsen, and Winter Harbour as part of the programme of up-dating the magnetic map of Canada and studying the behaviour of the magnetic fields of the Earth.

Glaciology, climatology

A detailed study was started of Meighen Icecap, to determine the energy relationships of a small dry high arctic icecap, its influence on and reaction to local climate, and its record of behaviour in the recent geological past. Meighen Icecap has been measured and studied annually since 1959, and this background of general data forms the basis for the present highly sophisticated study.

Glacier physics

The study of the relation between temperature and internal strain in a large mass of homogeneous crystalline material was continued, by means of temperature and closure measurements in the borehole that penetrates Meighen Icecap, and by laboratory study of the cores from the borehole. Measurements were continued of the mass balance of the icecaps on Melville Island, which are the thinnest and driest of North American arctic glaciers.

Gravity

The regional gravity surveys was continued over the continental shelf and continental slope offshore from Prince Patrick Island and M'Clure Strait. 931 gravity stations were completed, covering an area of 135,000 square kilometers, for mapping at a scale of 1:500,000. In addition, 75 gravity stations were completed in the Baumann Fiord area of southwestern Ellesmere Island, as part of the systematic survey of the entire archipelago.

Heat Flow

Measurements were made of the flow of geothermal heat from the floor of the ocean near the west end of M'Clure Strait. Five shallow oceanic and one bore hole station were completed in this study.

A novel method of determining the flow of geothermal heat by measuring the heat flux at the bottom of a deep lake of known or restricted circulation was used successfully in Lake Tuborg, an ice-dammed lake in central Ellesmere Island.

Hydrographic Survey

A detailed hydrographic survey of a small part of Great Slave Lake was undertaken at the request of the Department of Indian Affairs and Northern Development, in connection with engineering studies for a proposed water supply system. Four hundred and fifty depth measurements were made through the ice, using over-ice vehicles, along range lines established by conventional land survey methods.

A regional bathymetric survey, for publication on a scale of 1:500,000 was carried out of the Arctic Ocean west of Prince Patrick Island and M'Clure Strait, and over western M'Clure Strait, by spot soundings through the ice at intervals of approximately 8 kilometers, using Decca Lambda positioning. 966 soundings were obtained, covering an area of 135,000 square kilometers.

A systematic hydrographic survey, on a scale of 1:125,000 was made of Baumann Fiord, southwestern Ellesmere Island, using spot soundings through the ice. 364 soundings were obtained, positioned by theodolite, in an area of 1,300 square kilometers.

Members of the Polar Continental Shelf Project hydrographic section assisted in ground control surveys and in the establishment of a Decca Lambda survey chain in the Beaufort Sea-Mackenzie delta area, in preparation for the 1969 season.

Oceanography

Field support and equipment were provided for a study of the oceanographic conditions in the spring in Kane Basin, between Ellesmere Island and Greenland. Due to a combination of natural and logistics difficulties, no useful scientific results were obtained but the lessons learned should contribute to more productive surveys in the future.

Sea Ice Studies

Systematic patrols were made of all major waters of the Queen Elizabeth Islands and of the adjacent Arctic Ocean and Parry Channel throughout the season of significant sea ice activity. Information was collected on the nature, break-up, amount, distribution, dispersal, and formation of the sea ice and of certain tabular icebergs or "ice islands". It has proved possible to follow the movement of the same ice throughout the season and from year to year. The continuation of these surveys for a number of years is beginning to show the range of variations and apparently significant consistencies in sea ice nature and movement from year to year. Information is collected relating the behaviour of the ice to meteorological and oceanographic factors; this, it is hoped, will lead to a better understanding of the causes and controls of sea ice development and movement and thus, in turn, to better forecasts of ice conditions.

Miscellaneous Activities

Support was provided for the following studies:

- a survey of the insect life of central and northwestern Banks Island by the Department of Agriculture;
- an ethological study of the fauna of Bathurst Island by the National Museum of Canada, with particular attention to the relationship between wolves and muskox, the competition between various grazing species, the courtship and territorial behaviour of ptarmigan, and the breeding cycles of shore birds;
- a survey of the distribution of vegetation types on Fitzwilliam Owen Island and a study of lichens, mosses and peat on Prince Patrick Island and Meighen Island, by the National Museum of Canada;
- a study of the marine botany along the shores and under shallow-water sea ice around Prince Patrick Island, Eglinton Island, northern Banks Island and western Melville Island, by the National Museum of Canada;
- a study of acoustic propagation under sea ice in M'Clure Strait by the Defence Research Establishment Pacific of the Department of National Defence;
- botanical, ornithological and glaciological studies on northern Devon Island, by parties from various universities co-ordinated by the Arctic Institute of North America;
- glaciological, geophysical and hydrological studies on Axel Heiberg Island, by parties from McGill University;
- a study of the development of beaches in an area of sea ice, with related geomorphological studies, by McMaster University.

Plans for 1969

The main emphasis of regional surveys will be shifted in 1969 from the western archipelago to the Beaufort Sea-Mackenzie delta region. In preparation for this move, preliminary surveys to establish ground control and positioning requirements were made in the Mackenzie delta area in 1966 and 1967; and in 1968 a self-contained base camp was erected at Tuktoyaktuk, which, it is expected, will serve as a centre for scientific and survey work in the Beaufort Sea for several years. A Decca Lambda electronic positioning system was installed along the southern shores of Beaufort Sea, from Herschel Island to Atkinson Point, late in 1968, in readiness for the 1969 season.

The 1969 programme is a continuation of most of the major studies carried out in 1968 and earlier years, plus certain activities such as investigation of sea ice dynamics, measurements of surface thermal radiation, and geological studies, which have a special regional or local significance. In addition to the work centered in the Beaufort Sea and lower Mackenzie River area, which will be carried out mainly from the base at Tuktoyaktuk, there will be a number of studies throughout the archipelago, co-ordinated from Resolute and Alert. The 1969 programme includes

the second phase of the geodetic, gravity and oceanographic studies in the vicinity of the North Pole, and a continuation of the work started in 1967 and 1968 to correct the inaccuracies of determined geographical points along the shores of the Arctic Ocean. The field work is expected to engage a total of about 90 men, including personnel under contract and crews of supporting aircraft. Aerial transport in the field, including that under Project contract management but assigned to work carried out by or directed by other agencies of the Department of Energy, Mines and Resources, will be provided by one Bell 204B helicopter, one Bell 205A helicopter, one Bell 47G4 helicopter, two deHavilland DHC-3 Otters, and one Beechcraft D18S aircraft, for extended periods; as well as one deHavilland DHC-6 twin-engined Otter, one Bristol 170 Freighter aircraft, and one Westland SRN-6 hovercraft for shorter periods. Ground transport includes seven tracked and wheeled vehicles and about 12 motor toboggans and small amphibious vehicles. The offshore studies will be closely co-ordinated with C.G.S. Richardson of the Canadian Hydrographic Service and with other vessels as required. In addition to the camps at Tuktoyaktuk and Alert, additional established or semi-permanent facilities will be operated, as the programme requires, at Herschel Island, Hooper Island, Atkinson Point, Sachs Harbour, Mould Bay, Meighen Island, Bathurst Island, and Resolute.

**DEPARTMENT OF EXTERNAL
AFFAIRS**

DEPARTMENT OF EXTERNAL AFFAIRS

Responsibilities: The Department of External Affairs is concerned with any activities in the north conducted on behalf of or in co-operation with foreign governments or their agencies, including scientific or other projects in both the civil and military spheres. The Department is also responsible for co-ordinating with the appropriate Departments the granting of permission for foreign scientists and explorers wishing to work in the north. The Department is also concerned with co-ordinating, by means of an interdepartmental committee, policy views relating to all forms of transportation in the Pacific Northwest (in particular, road, rail and marine transport) to the extent that these involve relations with Alaska and the U.S. federal authorities. The Department is similarly, though less actively, concerned with boundary waters in this area.

Review of 1968 Operations

Winter Maintenances of the Haines Road

As the result of an exchange of notes between the Canadian and American Governments, effective June 23, 1967, the Canadian Government assumed full responsibility for the winter maintenance of that portion of the Haines Road lying within its jurisdiction. This agreement superceded that of November 27, 1964 between the Governments of Canada and the United States which provided for the winter maintenance of the Haines Road on a temporary experimental basis. Because of the increasing importance of this access road to the economy of the Yukon, the Canadian Government thought it desirable to assume the responsibility for the maintenance of the Canadian portion of this important highway link between the Yukon and the Pacific Coast.

**DEPARTMENT OF FISHERIES
& FORESTRY**

DEPARTMENT OF FISHERIES & FORESTRY

FISHERIES INSPECTION BRANCH

Responsibilities: Inspection of fish and fishery products and fish processing establishments to ensure compliance with the Fish Inspection Act, the Meat and Canned Foods Act, and the regulations made thereunder.

Long-Term Plans

To promote greater utilization of fishery products by ensuring that products reaching the consumer are of good quality and have been produced under sanitary conditions, and by providing technical assistance to the industry in the development of improved handling and processing methods and new products.

Review of 1968 Operations

The Inspection Branch at Hay River, N.W.T., is responsible for the administration of the Fish Inspection Act and Regulations and for the Meat and Canned Foods Act and Regulations. Due to technological advances in the fishing industry, this branch has been expanded to include the inspection of fish products, the analyses of water and ice used on fish and for clean-up in plants, the handling and processing of fish, the sanitary operation in plants and providing technical advice and assistance to industry in solving problems associated with various aspects of fisheries operations.

To assist with the effective discharge of these increased responsibilities, a stationary inspection laboratory under the supervision of a highly competent Quality Control Specialist was established at Hay River during the year under review.

CONSERVATION AND PROTECTION BRANCH

Responsibilities: Conservation, protection, and wise utilization of the fisheries by application of proper management techniques and practices, and by enforcement of the Fisheries Act and regulations made thereunder.

Long-Term Plans

To conserve and protect the desirable fish and marine mammal populations by application of modern conservation measures wherever necessary. To encourage the development of the fishing industry in the territorial economy. To encourage the optimum use aspects of the three types of fishing; i.e. commercial, sports, and domestic, dependent upon circumstances of markets, transportation access, and other factors.

Review of 1968 Operations

The fisheries in the Northwest Territories are controlled from the Department's district Headquarters in Hay River. One of the main objectives of this Branch is to conserve and expand the primary fishing resource and to promote its optimum use consistent with the principles of sound fishery resource management.

Great Slave Lake is still the main source of the commercial supply. Lakes within the Control Area are being moderately exploited.

Extensive travelling by Fishery Officers is still necessary to observe operations, gather statistical and biological data, enforce regulations, do test fishing and lake survey work and to liaise and collaborate with other government agencies on the many diversified activities connected with the fisheries of the Northwest Territories.

Angling is becoming a major industry in the Northwest Territories. Sports fishing for beluga out of the Port of Churchill in Hudson Bay continues to grow in importance.

Lake survey work carried out this past year resulted in more lakes being placed on the growing list reserved for angling and domestic purposes.

RESOURCE DEVELOPMENT BRANCH

Responsibilities: The maintenance and development of economically important stocks of fish and shellfish in a number of coastal and inland areas; the design and execution of management and development programs aimed at enhancing sport and commercial fish populations.

Long-Term Plans

To develop existing sport fish populations and where necessary to introduce acceptable exotic species to more effectively utilize the available waters in the Territories. Where applicable to carry out observations and studies on runs of anadromous species in the Yukon and Northwest Territories.

Pollution and other multiple water use problems related to fisheries will be dealt with as required.

Action has been taken to commence the establishment of a permanent Resource Development staff in the Central Region to deal with fisheries development and management matters in the Northwest Territories. A senior Biologist who will work from Regional Headquarters at Winnipeg, has been appointed. Additional professional and support staff will be added as required. Staff to deal with Yukon Territory matters will continue to be assigned from Pacific Region.

Review of 1968 Operations

A total of 480,000 rainbow trout eggs were planted in three lakes in the Yukon Territory during 1968. These plantings represent the continuation of a program begun in 1959 to provide rainbow trout fishing near population centres in the area. The releases made are shown in the following table.

LAKE	POPULATION CENTRE	DATE	# EGGS
Wye Lake	Watson Lake	May	150,000
		July	150,000
Hanson Lakes	Elsa and Mayo	May	150,000
Long Lake	Whitehorse	May	30,000

In Wye and Long Lakes the spawn was held in floating trays to the late alevin stage prior to release. High mortality resulted and few alevins were actually released. In Hanson Lakes the eyed eggs were buried in the gravel bottom of a connecting stream. New methods for introducing trout to the Yukon Territory are now under consideration.

Pollution studies have been undertaken in association with Venus Mines, Y.T. milling processes of lead, zinc, silver and gold. Bio-assays were conducted to determine the toxicity of effluents from the various processes.

FISHERIES RESEARCH BOARD OF CANADA

ARCTIC BIOLOGICAL STATION, (Ste. Anne de Bellevue, Que.)

Responsibilities: To provide scientific information and advice on management procedures to agencies that are concerned with development of northern fisheries, also to several international commissions involved in conservation of Canadian marine mammals. All coasts of Canada are included in the marine mammal research; mainly arctic waters are involved in fisheries investigations and related biological oceanography.

Long-term Plans

To develop a sound biological basis for maximum sustainable yield of the aquatic resources for which this Station is responsible, including various species of cetaceans, seals, and fishes mainly marine and anadromous in northern waters. Plans include some expansion of marine mammal investigations, and increased attention to arctic marine ecological studies on a year-round basis.

Review of 1968 Operations

Marine Mammals

As in previous years some species, e.g. harp seals, are included here because they range into the far north although the present fisheries and related investigations are not mainly in the Territories.

Ringed seal

Recent studies of large collections of specimens from Baffin Island show pronounced difference in age structure between populations from Pangnirtung in Cumberland Sound (mostly immature) and Broughton Island on the east coast (mostly mature, age 6 years and older). Consistently high catches in Cumberland Sound suggest extensive annual immigration of immature seals from other coastal areas, possibly as far distant as Broughton Island.

Harp seals

There are two herds; in spring one whelps and moults in the Gulf of St. Lawrence, the other east of Newfoundland (the "Front"). Tagging has shown that these herds mix in summer in arctic waters off Baffin Island and West Greenland.

In the Gulf, sealing is restricted to Canada. There is an annual quota of 50,000 young seals in all but the northernmost area, and adults are protected. Studies include analysis of survival of year classes after known kills of young, and of reproductive rates, believed to be density-dependent. These indicate a maximum sustainable yield of about 90,000 young seals per year, and recently the annual kill has averaged about 80,000. On the "Front", Canada and Norway participate in the fishery, and management is under consideration by the International Commission for the Northwest Atlantic Fisheries. Some recent catches are believed to be excessive. Annual catches of 133,000 or more young have been followed by low

survival of those year classes, while catches of 95,000 in two recent years have been followed by good survival.

White whale

Tagging, started in 1967 in western Hudson Bay, was continued in 1968 when 700 harpoon tags were applied. From the 800 tags applied to date, 3 recoveries show migratory movements up to 600 miles in the Bay. Also in 1968, 4 white whales were tagged in the Mackenzie Delta and 2 in Cumberland Sound. Ninety animals were injected with tetracycline and tagged, in an attempt to study the rate of development of growth layers in the teeth and to facilitate aging of specimens.

North Atlantic whales

Since 1964 interest in whaling has revived in eastern Canada; two plants now operate in Newfoundland and one in Nova Scotia. Present research is aimed at determining existing whale populations and how they are affected by hunting pressure. The annual stock assessment includes (1) use of a chartered vessel over a large area of the Northwest Atlantic for systematic sightings and random tagging of specimens; (2) search for tags in whales taken by the industry; (3) recording detailed information on whales landed for processing at the plants, to permit year-by-year comparison of the age composition and reproductive potential of the stock. At present commercial interest is mainly in the fin whale and total annual quotas for it were 800 in 1967 and 700 in 1968. Detailed biological information is recorded also on other species of whales, e.g. minke and sei, which may be caught and processed, and also on dolphins and porpoises which are encountered during the sighting and marking research cruises.

Pacific mammals

In 1968 FRB continued pelagic fur seal research in the Northeast Pacific for the tenth consecutive year under the Interim Convention on Conservation of North Pacific Fur Seals which involves Canada, Japan, U.S.A., and U.S.S.R. A hunting vessel chartered by this Station collected the required 500 seals for research purposes off British Columbia and Alaska from March through June, 1968.

Biological Oceanography

The marine ecology station at Frobisher Bay has operated on a continuing basis since August 1967, using M.V. Calanus and a shore-based laboratory. Data have been compiled on meteorological features; sea ice and snow cover; water movements; temperature, salinity, dissolved oxygen, nutrients and chlorophyll; phytoplankton, zooplankton and zoobenthos quantities and species composition; primary productivity rates. The station is ice-covered for about 8 months of the year. Primary and secondary production rates are low by North Atlantic standards.

Progress was made on cataloging all the known dinoflagellates of arctic Canada. Lipid development in arctic dinoflagellates and diatoms has been studied, and the large amount of oil produced has been considered from the point of view of possible future exploitation. Intensive work has been done on the taxonomy of copepods in arctic and North Atlantic waters.

Marine and Anadromous Fish

The sustainable yield of landlocked arctic char in a small 20-acre lake on Victoria Island was estimated to be 5.3 lb/acre. The low trophic status of feeding appeared to be responsible for the unexpectedly high yield potential. Malakes near settlements have a similar arctic char potential which might be utilized.

A basic productivity survey was made of a small 10-acre lake on the south coast of Victoria Island. Fish were absent and small arctic char were introduced experimentally.

The marine productivity study, started in 1966 at Starvation Cove 40 miles west of Cambridge Bay, was continued.

Over 100 arctic char were transferred from Victoria Island to the laboratory at Ste. Anne de Bellevue where they are undergoing food intake and growth studies with controlled light and temperature.

Plans for 1969

Continue the marine mammal investigations at about the same level as in 1968, including: white whale population studies in Hudson Bay and off Baffin Island; an aerial and ground survey of ringed seals on eastern Baffin Island. and laboratory analysis of a large body of data on this species; harp seal population and behaviour studies, Gulf of St. Lawrence and Labrador "Front"; population studies on large North Atlantic whales; pelagic research on the northern fur seal in Pacific Ocean off British Columbia and State of Washington.

Continue long-term marine ecology study, Frobisher Bay, Baffin Island, as in 1968. Work up data on arctic diatoms for publication.

Terminate marine fisheries productivity study, started 1966, near Cambridge Bay, Victoria Island. Participate in interdepartmental survey of fisheries potential in vicinity of Ungava Bay.

FRESHWATER INSTITUTE, (Winnipeg, Man.)

Responsibilities: To carry out research on the fresh waters of Central and Northern Canada with particular reference to regional limnology, the fish producing capacity of lakes and rivers, and the status of fish stocks: to investigate the effect of environmental changes with particular reference to aquatic pollution and eutrophication: to conduct research on fish storage and preservation and the development of new fish products.

Long-term Plans

Present financial conditions are seriously affecting the development of plans for work in the North, although much of the work on pollution, eutrophication and technology will have direct application to northern conditions. A limited program of limnology will be carried out on Great Bear Lake in April 1969; this is the only field operation planned for the coming year.

Review of 1968 Operations

Survey work was carried out on three lakes in the Northwest Territories: Great Slave Lake, Nonacho Lake and Kakisa Lake. The Great Slave Lake operation consisted of three cruises to investigate the basic limnology; temperature, sedimentation and plankton studies were of primary importance. A three-week survey of Nonacho Lake was done to estimate possible effects of the inundation which will be caused by the proposed power dam. A further three-week study was carried out on Kakisa Lake with particular reference to the fish stocks.

Due to changing needs within the Institute, the Field Station at Hay River was closed and the Officer-in-charge was moved to Winnipeg. This station had been in operation since 1945 and its major function of investigating the first twenty years of the commercial fishery had been completed.

Technological projects specifically related to the north included the development and testing of procedures for the preparation of smoked char products, char aspic, and smoked inconnu. An inexpensive fish drier for use in remote areas has been designed and tested at the request of the Department of Indian Affairs and Northern Development. This drier is simple to construct and has no moving parts.

Engineering studies have been undertaken to develop portable refrigeration equipment to facilitate fishing operations on remote northern lakes. Field trials have demonstrated that portable ice-making machines can be used to advantage. Preliminary tests have been completed on a prefabricated insulated shed having a fish storage capacity of at least 2000 lb. This unit consists of 2-inch urethane panels clad with fibreglass which can be readily dismantled for transport in small aircraft. Results indicate that use of such a shed could cut ice consumption in half. This project was financed in part by the Industrial Development Service of the Department of Fisheries.

Plans for 1969

A field party will visit Great Bear Lake in April 1969 to examine the conditions in

the lake at the end of the winter period. Observations will be made on temperature, sedimentation, plankton, primary production and bottom fauna. A party of four will spend three weeks in the field locality.

DEPARTMENT OF FISHERIES AND FORESTRY

FORESTRY BRANCH

Responsibilities: To prepare forest inventories and forest management plans; to promote the adoption of improved methods of forest management and protection from fire best suited to the region; to conduct annual surveys and related research on forest insects and diseases; to provide advisory services to public and private forest management agencies on forest insect and disease control.

Long-term Plans

To determine the potentialities of the forest resources of the north, and to assist in the preparation of plans for their protection and utilization.

Review of 1968 Operations

(a) *Forest Management Institute, Ottawa*

Five reports on major forested areas were completed. These contained information on the Nisutlin (Teslin), Buffalo River, Lower Slave River, Lower Liard River, and Upper Liard River areas, which encompass some 10,300 square miles. Two additional reports on the Wood Buffalo National Park, and of surveys of special areas, are being prepared. The analysis of a reconnaissance forest inventory for a 1,060 square mile area in the Mackenzie River Delta was completed. Large-scale aerial photography was used in this project.

Assistance to the Resource and Economic Development Group of the Department of Northern Affairs with regard to commercial logging proposals, continued. This service required more detailed recalculation of source data and the design of new summaries.

(b) *Regional Establishment for Alberta, Yukon, Northwest Territories, Calgary, Alberta*

Insect and disease surveys were carried out in the Mackenzie District and Yukon Territory by staff headquartered during the summer at Fort Providence and Whitehorse. Special attention was given in 1968 to surveys of spruce budworm damage in the Slave and Mackenzie River drainages.

Plans for 1969

(a) *Forest Management Institute, Ottawa*

Continued involvement in forest inventory activities; specific plans include updating of a survey of an area along the Lower Liard, at the request of the Department of Indian Affairs and Northern Development.

(b) *Regional Establishment for Alberta, Yukon, Northwest Territories, Calgary, Alberta*

Insect and disease surveys will continue with seasonal staff headquartered at Fort Providence and Whitehorse, but special surveys of spruce budworm will not be made in 1969. Advisory and consultative services on forest management problems will be provided on request of the Mackenzie and Yukon Forest Services, with special attention to problems of fire, insect and disease control.

This Regional Establishment intends to augment its technical and advisory services program to northern agencies with anticipated new staff in 1970. At that time, the regional headquarters will be in Edmonton.

**DEPARTMENT OF INDIAN AFFAIRS
& NORTHERN DEVELOPMENT**

DEPARTMENT OF INDIAN AFFAIRS & NORTHERN DEVELOPMENT

CANADIAN WILDLIFE SERVICE

Responsibilities: Surveys and inventories of wildlife resources; conducting research on wildlife species in relation to their habitat; collection and analysis of animal population and utilization data; recommending management procedures for particular species of economic importance; research, management, and administration of migratory birds under the Migratory Birds Convention Act; co-ordination of federal, provincial, and territorial action on common wildlife problems, including caribou research and management; studies on wildlife disease and pollution.

Long-term Plans

To continue studies of major wildlife resources; to extend research to less-known species; to establish more adequate research facilities in the field; to assess the success achieved in management of wildlife resources to date, and the potential success in this endeavour for the future.

REVIEW OF 1968 OPERATIONS

Mammalogy projects

Preliminary studies of the range in the Reindeer Preserve have been concluded. In 1968 the management of the Canada Reindeer Project was turned over to the Canadian Wildlife Service and more intensive studies on range carrying capacity and range utilization were begun. The responsibility for the Canada Reindeer Project was accepted on a five year term to allow time for the management measures based on sound research to be instituted.

The study of the basic nutritional requirements of barren-ground caribou and other physiological characteristics was continued in co-operation with the University of British Columbia.

Studies of barren-ground caribou distribution and utilization were continued. A group of five biologists is now studying the Manitoba-Keewatin herds intensively. Their studies are concerned with population dynamics, range-carrying capacity, development and perfection of aerial survey techniques, movements, and all other parameters necessary to develop a sound management program for the utilization of the caribou. The field work for this study was concluded in 1968 and the research data is being assembled for presentation in 1969 and 1970.

The study of the ecology of wolves on barren-ground caribou range was continued into 1968 and a complete report of the entire study is being prepared.

A preliminary assessment of the feasibility of conducting a study of Baffin Island wolf ecology was undertaken northeast of Wordie Bay in 1965, and a more intensive study began in 1966 under contract with the University of Toronto. This work is continuing, with student involvement and is expected to conclude in 1969.

Polar bear research was continued, and trapping and marking techniques were successfully applied. Some progress was made in co-ordinating this study with those being carried out by Ontario, Manitoba, and Quebec. Initial studies on radio-tracking were begun in the Churchill area and marking has continued. The study is expected to expand to include all areas of the range of the polar bear in Canada.

A study of the ecology of grizzly bears in the Yukon Territory was continued in the Kluane Game Sanctuary, and additional biological data were obtained from bears killed by sportsmen elsewhere in the Yukon. Radio-tracking was begun in 1968 with limited success and will be concluded in 1969.

Studies of muskrat, beaver, and mink ecology were continued on the experimental trapping area in the Mackenzie Delta. Carcasses from marten trapped in the Anderson River area were collected for reproductive and other biological information. A study on the food and energy relationships in beaver in the area was completed in 1968.

Anthrax control in bison continued in Wood Buffalo National Park and in areas north of the Park. A management plan to solve the three principal diseases affecting bison-brucellosis, tuberculosis, and anthrax, has been submitted for consideration and preliminary work on corrals has begun.

Preliminary studies were begun on a game survey in Game Management Zone 12 in the Mackenzie Mountains. A research program on the life history of Dall sheep in the area was also begun. Further work is also being carried out in Zone 19 adjacent to Zone 12.

Ornithology Projects

A six year study of the breeding biology and distribution of Ross' geese in the Queen Maud Gulf area has been completed. The material gathered is presently being processed and the results will be published.

The study of factors influencing predation on goose colonies by parasitic jaegers at McConnell River, N.W.T. was concluded and a report is being prepared.

A biological assessment of geese breeding on the Great Plains of the Koukdjuak was completed.

Three contracts with the University of Western Ontario were continued as part of an integrated study of the population dynamics of small races of Canada geese and snow geese at McConnell River.

A study of the population genetics of snow geese was started.

A study of the imprinting of day-old snow goose goslings was undertaken.

Periodic surveys of whooping crane breeding areas in Wood Buffalo National Park were continued. A record total of ten nests was found and one egg removed from each of them for hatching in captivity.

Investigations of ravens and whistling swans in the Mackenzie Delta continued.

A survey was made of pesticide residue levels in peregrine falcons, gyrfalcons and the principle prey species in the Thelon, Coppermine and Bathurst Inlet areas.

A survey of the economic impact and utilization of wildlife in the Mackenzie Delta was continued.

Plans for 1969

Mammalogy Projects

The intensive study of the Manitoba-Keewatin caribou herds will be continued as a scientific team effort. Termination reports on data gathered will be submitted.

The research project on Dall sheep in the Mackenzie Mountains will continue with more intensive field studies on the biology of the sheep. An inventory of other mammals in Zone 12 and Zone 19 will be continued.

Work on bison in the Northwest Territories and in Wood Buffalo National Park will continue with more emphasis on putting management disease control measures into effect. Bison will be vaccinated and a five-year program to place as many bison as possible in a fenced area will begin. The disease problem will in this way be reduced or eliminated.

Research will continue on the nutritional requirements and the physiological characteristics of barren-ground caribou and reindeer.

A study of wolf ecology on Baffin Island will be terminated and a report in the form of a doctoral dissertation will be submitted.

Polar bear research will continue, with emphasis on tagging and radio-tracking to obtain information on movements and life history.

Field studies on grizzly bears in the Yukon Territory will terminate and a report will be submitted.

Field studies of the population ecology of muskrats, beaver, and mink on the experimental trapping area in the Mackenzie Delta will terminate and the data gathered will be analysed.

The high mortality found in young arctic fox will be studied in the Baker Lake area in co-operation with the University of Saskatchewan.

Ornithology Projects

We will continue the snow goose population genetics study.

There will be increased banding of snow geese at Cape Henrietta Marie and McConnell River.

There will be no change in the projects not listed as being terminated in 1968.

DEPARTMENT OF INDIAN AFFAIRS & NORTHERN DEVELOPMENT

GOVERNMENT ACTIVITIES IN THE NORTH, 1968

COMMUNITY AFFAIRS BRANCH

Responsibilities: Administer the Indian Act, in such measure as it applies to the North.

Formulate, administer and support implementation of policies and programs designed to ensure that Indians and Eskimos in the North have available to them those services and facilities they require in order to participate fully and equitably in the Canadian way of life, while at the same time retaining unique identities as distinct ethnic groups.

Long-Term Plans

The long-term plan of the Branch is to transfer responsibilities for specified services to all Indian and Eskimo residents of the North.

Review of 1968

The major result of the year's activities may be said to have been assistance in the effective transfer of responsibility for services to Indian and Eskimo people to the Government of the Northwest Territories.

During the last week of September, 1968, the Community Affairs Branch was formed from portions of the former Indian Affairs Branch and the former Northern Administration Branch. Accordingly, certain functions enumerated in the following pages have been assumed by other Branch responsibility centres.

WELFARE SERVICES

Responsibilities: Provision of welfare services to all residents of the Northwest Territories on behalf of the Federal and Territorial Governments, and to the Eskimos in Arctic Quebec. Operation of Children's Receiving Homes at Yellowknife, Fort Smith, Inuvik, Churchill and Frobisher Bay, a Home for the Aged at Aklavik, and five transit centres at various northern points. Provision of an Eskimo-English translation service. Stimulation of cultural and social development of northern ethnic groups. Provision of advice on Yukon matters as required.

Long-term Plans

The Department of Indian Affairs and Northern Development, in close consultation with the Government of the Northwest Territories, has been planning to transfer responsibility for several functions to the Territorial Government in accordance with recommendations of the Carrothers Commission. One of these functions to be transferred is the provision of welfare services to all residents of the Northwest Territories. Plans call for the transfer of the welfare function in the Mackenzie District on April 1, 1969, and for the remainder of the Northwest Territories on April 1, 1970.

Also to be transferred in 1969 are programs aimed at encouraging citizen participation in the solutions of local government problems and the general management of community affairs.

The Department will retain responsibility for the development of cultural expression among Eskimos and northern Indians of the Northwest Territories and all social welfare services to the Eskimos and Indians of Arctic Quebec.

New Children's Receiving Homes are being constructed at Fort Smith, Hay River and Inuvik and will be in service in mid-1969. Construction will be started in 1969-70 on a Children's Receiving Home at Frobisher Bay with completion expected in 1970-71.

Review of 1968

A full range of social welfare services was extended to Eskimos in northern Canada. In addition, five transit centres were operated to accommodate Eskimos on their way to and from southern Canada. Eskimo Regional Councils were active and in April, 1968, delegates from Community Councils in the Baffin Region met with Departmental representatives at Frobisher Bay to consider problems of mutual concern.

Approximately 1700 Eskimos were repatriated to their homes following hospital care. Five Children's Receiving Homes were operated with an average occupancy of ten children in each home. Children in foster homes averaged about 240 per month.

A Community Development Fund was available to northern communities to enable them to undertake locally-initiated projects for general community improvement and economic development. The budget for the Fund was \$287,000.

HOUSING

Responsibilities: To provide for Eskimo and Indian people who live in the North, housing suitable to their needs and resources and comparable to that available to other Canadians, with due allowance made for unique conditions of climate and geography peculiar to Arctic areas.

Long-term Plans

To implement the Program of Northern Housing as set down under "Responsibilities", above.

Review of 1968

The Northern Rental Housing Program provided 340 three bedroom rental houses for the Indians and Eskimos of the Northwest Territories and 20 similar units in Arctic Quebec. With the Program approximately 50% completed a total of 994 houses have been supplied to date with an additional 297 allocated for 1969. By the end of 1968 rental collections were approaching an annual rate of \$300,000.

Local participation in the program increased during the year with the formation of additional housing associations and with an apparent willingness on the part of existing associations to become more involved with the operation and administration of the rental housing.

NORTHERN SCIENCE RESEARCH GROUP

Responsibilities To sponsor and conduct research; to encourage research by non-government agencies; to collect and disseminate scientific information, and to operate the Inuvik Research Laboratory.

Long-term Plans

To assist in the development of the Canadian north by encouraging scientific investigation; to provide advice and research services to organizations of the department, to formulate detailed research programs, and to arrange for their implementation.

Review of 1968 Operations

Northern Research Program

The Group conducts a continuing program of northern research, mainly but not exclusively in the social sciences. Much of this research is undertaken by university scientists and graduate students working under contract or in seasonal employment.

The Mackenzie Delta Research Project, designed to isolate and analyse social and economic conditions which impede northern people from participating in northern development, continued in 1968. Analysis of the data collected in the Delta was used to assess the extent which native peoples are making effective adjustments to changes brought about by commercial and government expansion in the north, and to suggest possible solutions to the problems identified.

In addition to the Mackenzie Delta project, a number of other research projects were initiated or continued. They included projects in anthropology, sociology, and geography.

The Scientific Research Laboratory at Inuvik, Northwest Territories, which includes an annex for cosmic-ray measurements, was opened in 1964 and provides general laboratory and other facilities to support a variety of scientific disciplines. The Laboratory contains low-temperature rooms and special Arctic experimental facilities in addition to general laboratories, photographic dark room, library, offices and seminar rooms. Approximately 200 investigators and 120 scientific projects were supported by the laboratory staff during 1968. Seven of the abandoned intermediate DEW line stations have been reserved for use as required for scientific purposes.

Grants Program for Northern Research Institutes and Scientific Research Expeditions

During the seventh year of this program of assistance to northern research institutes and northern scientific expeditions, amounts totalling \$250,000 were awarded, as recommended to the Minister by a Grants Committee. Through this grants program a large number of northern research projects were supported, in a wide variety of scientific disciplines. Grants were made to:

Arctic Institute of North America
Arctic Studies Group (L'Université de Montréal)
Boreal Institute (University of Alberta)
Canadian Research Centre for Anthropology (University of Ottawa)
Centre d'Études Nordiques (Université Laval)
Committee on Northern Studies (University of Manitoba)
Committee on Arctic and Alpine Research (University of British Columbia)
Institute for Northern Studies (University of Saskatchewan)
President's Committee on Northern Area Studies (Lakehead University)
Committee for Arctic and Sub-Arctic Research (University of Toronto)
Senate Committee of Northern Research (Bishops University)
Arctic Studies Conference (University of Alberta)
Institute of Social and Economic Research (Memorial University)
McGill Committee for Northern Research (McGill University)
The Somerset Island Expedition (University of Ottawa)
The Devon Island Expedition (Arctic Institute of North America)
The Icefield Ranges Research Project (Arctic Institute of North America)

A grant of \$30,000 was made towards the cost of publishing the Arctic Bibliography.

Research Directed by the Group

The main components of the Group's research program are noted below:

- (1) Study of problems related to the relocation of Eskimos to centres of employment, begun in the summer of 1967, will be continued. A more intensive investigation based on the general findings of the previous year is being undertaken.
- (2) Continued use will be made of the data and analysis obtained in Mackenzie Delta Research Project, by communicating and explaining the findings to persons concerned with social development in the area.
- (3) Study of the social implications of the Northern Public Housing Program, and of the concentration of northern people in larger settlements, will be continued.
- (4) The collection and analysis of social and historical data dealing with northern development will be continued, together with the provision of such information to scientists and other users.
- (5) The reviewing, abstracting, and distribution of information about research and development in Canada, Alaska, Greenland and the Soviet North will be continued.

The Scientific Research Laboratory at Inuvik, Northwest Territories will continue to provide facilities.

The Grants program will continue to encourage university research in the north, as will continued support to the Arctic Institute of North America for the publication of the Arctic Bibliography.

DEPARTMENT OF INDIAN AFFAIRS & NORTHERN DEVELOPMENT

INDIAN-ESKIMO ECONOMIC DEVELOPMENT BRANCH

Due to the major reorganization which took place in the department in 1968, the former Northern Administration Branch was phased out and its functions, relating to economic development (other than non-renewable resources), were assumed by this branch, pending transfer of these functions to the Government of the Northwest Territories.

FINANCE AND MANAGEMENT ADVISORY DIVISION

Responsibilities: Financial planning, estimates, accounting, pay and benefits, administrative systems and procedures, administration of civil service housing in northern Canada, and office services in Ottawa.

RESOURCES AND INDUSTRIAL DIVISION

Responsibilities: In the Yukon Territory to plan, organize and initiate, in co-operation with the Indian people, other government agencies, private firms, organizations, and individuals, a comprehensive development program to include logging and sawmilling, big game outfitting, handicraft, mining, trapping, tourism, and fishing. To encourage the participation of the Indian people in the expansion and development of their human resource; to stimulate steady growth of self reliance and economic independence.

Long-term Plans

The rapid industrial development of the north is exerting pressure on the Indian people, to shift from their traditional pursuits of hunting, fishing, and trapping to a wage earning economy. Through lack of sophistication and experience, they have difficulty finding or holding jobs in this changing environment.

Our long term plan offers the following:

1. For those that wish to remain prime producers; we forecast increasing activity in trapping and fishing.
2. To encourage the Indians to take advantage of tourism and big game outfitting, we offer assistance to upgrade equipment and areas and will introduce new tourist ventures.
3. We have noted that many of the major mines in the north were first staked by Indian prospectors. We expect, with guidance, more Indians will become involved with prospecting, and more important, will participate in the actual formation of mining companies.
4. We are increasing our activity in the formation of small businesses and co-operatives, notably in handicraft, logging and sawmilling. At present the Indians lack the necessary skills to organize, manage, and supervise business ventures and of necessity we employ casuals or supervisors under contract to

carry out these services. Our ultimate goal, as the educational standard and experience of the people increases, is to withdraw direct involvement and have management and supervision carried out in total by the Indian People.

Review of 1968 Operations

Fishing

The Indians of the Yukon harvested 154,000 lbs. of salmon and 73,000 lbs. of indigenous fish. The sale of fish is of minor economic importance, however, in food dollar value, the 1968 catch represented approximately \$75,000.00.

Big Game Outfitting

There is one Indian Big Game Outfitting operation in the Yukon which is supervised by a non-Indian under contract.

This operation grossed \$15,000.00 in 1968.

Sixty percent of the guides in the Territory are of Indian Status. Estimated wages from guiding are \$50,000.00 annually.

Tourism

Three Indians operate occasionally as fishing guides and earn nominal amounts to supplement earnings derived mainly from trapping and commercial fishing.

Handicraft

The Yukon Indian Handicraft Marketing Service supervised by a non-Indian casual grossed \$71,400.00 in 1968, compared with \$35,000.00 in 1967 and \$7,000.00 in 1966. Emphasis was placed on quality control and production and a limited advertising program was carried out. Various Indian women were employed from time to time in the outlet and one at least now plans to start a small store in her own village.

Logging and Sawmilling

A logging and sawmilling co-operative was formed at Ross River, Yukon, to service the huge Anvil Mining development. Production began in early summer. Indians were trained in all phases of the operation and the co-operative sold 238 thousand feet of lumber before construction ceased in early November. Another opportunity for a logging sawmilling project arose in the Cassiar area. Equipment was purchased and timber limits were acquired.

Mining

Numerous Indians were contacted regarding their prospecting activities. They were encouraged to seek technical advice regarding the staking recording and possible sale of their finds. All too often in the past, Indians have not realized as much as they should from their finds.

Trapping

We continued a trapper education program with visits to each village and group discussions and demonstrations. The most up to date figures we have are from June 1967 to July 1968. Based on royalties paid, the trapping industry grossed \$82,000.00 during this period.

Plans for 1969

Fishing

Due to the limited allowable harvest in the Yukon, large scale commercial fishing projects are not planned, however, we will assist these Indians in the business to upgrade their equipment and offer advice on up to date techniques. We have assisted in the marketing and will continue to do so.

Domestic fishing is an important economic factor being a major source of food for the people and their all important dog teams. The people have experienced difficulty buying good quality nets and equipment at a reasonable price. It is our intention to supply these nets at cost where they are unobtainable from other sources.

Trapping

Our trapper education program will continue. This fall we plan on having a trapping specialist travel to each village to discuss current trapping practices and pelt handling. We have been encouraging the use of the Conibear traps during the spring beaver hunt to cut down the practice of shooting. Fur prices, at long last, appear to be moving up. With better trapping and pelt handling practices, the use of the Conibear trap and higher fur prices, the outlook for 1969-70 seems to be very encouraging.

Big Game Outfitting

The one Indian Big Game Outfitting operation seems to be fully booked, which means a projected gross of about \$26,000.00. We are continually on the lookout for additional areas, however, the price when they become available is usually prohibitive relative to the annual gross. Guiding will remain the major source of income for a large number of Indians for several years to come.

Tourism

We have planned a new venture to begin this year. From time to time, we receive enquiries regarding guided trips down the river the Sourdoughs used. Up to now, there has been no one to whom we could refer the enquiries. We will begin Yukon Guided River Tours this year. A 30 foot river boat will be built at the Whitehorse Vocational School.

Camping equipment will be purchased and an exploratory trip will be taken to select camp sites etc. Advertising will begin in May. The 1969 trips will be confined to a four day trip down the Yukon River from Whitehorse to Dawson City and in subsequent years this will extend to the Teslin, the Pelly and the Stewart. All tours will end at Dawson City which is the end of the route of the Sourdoughs. A number of experienced Indians have expressed keen interest in this idea.

Handicraft

We have completed negotiations for the construction of a Tourist Information Centre and a Handicraft Marketing Outlet to be built on a cost sharing basis with the City of Whitehorse and the Chamber of Commerce. Construction should begin by the 15th of May and the building opened by the 1st of July. The Handicraft section will include a sales area much larger than our present rented accommodation and a large workshop and storeroom. The building will be in a complex made up of the Centennial City Hall, the McBride Museum, and Sam McGees Cabin. This complex is a natural tourist attraction. The Handicraft service embarked on a parka project in 1968 and the coats were so well received that this is being extended this year. We plan on buying a fur trader's licence both to increase the dollars earned by trappers wishing to deal with us and also to provide for a source of pelts to be used in the parkas. The trappers will be paid auction prices for their furs and selected pelts will be sent out for tanning. Handicraft will go modern at the Yukon Trade Show in late April when the Yukon Indian Handicraft Marketing Service will be putting on a fashion show featuring deerskin miniskirts and jackets, rabbit evening gowns, wolf lynx and fox wraps, and other items of everyday wearing apparel made by the Indian women from traditional native materials.

A gross of \$100,000.00 is forecast for 1969. This is based on the fact that sales for the first two months of 1969 doubled the gross for the same period in 1968.

Logging and Sawmilling

The Ross River Co-operative Sawmill will begin again in May. Requests for lumber far exceed the production capabilities of the mill. We anticipate logging and sawing about 1,500 M FBM, however, we have received enquiries for approximately 3,000 M FBM.

An additional logging and sawmilling project is being put together at Cassiar, B.C., and we expect to cut the first logs in late fall. The Cassiar Asbestos Company requires about 250 M FBM of construction lumber annually and as well they have made plans for a palleting system for the shipment of asbestos. If their plans go ahead, they will require about 75,000 pallets a year using 3,000 M FBM of lumber. Pallet manufacture would employ numerous Indian people from the Cassiar area.

Mining

Two Geologists, the Placement Officer and the Development Officer will conduct basic prospector's courses at three Indian villages this spring. As time permits, this course will be offered to each Indian village in the Yukon. Our goal is to ensure that the Indian prospector received the maximum benefits from his prospecting efforts.

Establishment of Co-operatives

The Indians of Old Crow have indicated a strong desire to establish a co-operative store to include an outlet for their muskrat trapping and their handicraft. Much of the groundwork has been done and it is felt that a formal request for assistance will be received from the Band after muskrat season, probably early June.

The Cassiar sawmill project will probably take the form of a co-operative. Indian leaders from the area have expressed this wish and discussions will be held with them to explain co-operative principles and establishment.

SMALL BUSINESS SERVICES

Responsibilities: The Division was structured to administer a program of development, assistance and training designed to improve economic conditions in the Northwest Territories in the fields of:

1. Arts and Crafts
2. Secondary and Service Industries
3. Resource Harvesting
4. Co-operatives
5. Area Economic Surveys
6. Tourism

Emphasis is placed on providing technical and managerial guidance towards specific assistance to Eskimo and Indian people.

Long-term Plans

The transfer of administrative responsibility for this program to the Government of the Northwest Territories will be completed not later than March 31, 1970.

Review of 1968 Program

Continued training programs and quality controls increased production of the numerous arts and crafts centres. The value of production rose to \$1,500,000.

Small business development saw a new industry set up at Baker Lake for the manufacture of duffle clothing, a canoe building project started at Hay River and arrangements approved for a knitwear factory at Frobisher Bay. The Rankin Inlet Cannery was upgraded and is now certified by both Fisheries and Agriculture Departments.

Technical assistance to the Resource Harvesting program resulted in increased volume and better prices for sealskins in the eastern Arctic and far northern Arctic coastal areas, and to greater lumber production in the Mackenzie District.

Co-operative development saw the incorporation of six new co-operatives, two in the Mackenzie District and four in the eastern Arctic. Progress was made in preliminary education in credit union development at several locations. Increased assistance was provided to co-operatives in the form of managerial and technical services. Sales exceeded the \$2 million mark and members' equity climbed to almost \$1 million.

Area Economic surveys were undertaken and completed in the central Arctic and lower Liard regions and a re-appraisal made of the Keewatin mainland.

In tourist development, a new film entitled "North" was completed in both the English and French languages. Both versions will be released in 1969.

DEPARTMENT OF INDIAN AFFAIRS & NORTHERN DEVELOPMENT

NATIONAL AND HISTORIC PARKS BRANCH

National Parks Service – Planning Division

Responsibilities: The National Parks System should include outstanding examples of the natural features of each major region of Canada. The objective is to identify areas of national significance in all parts of Canada, including the North, and to establish suitable areas as National Parks.

To this end surveys of potential sites for National Parks in the Yukon and the Northwest Territories have been carried out. So far these have covered parts of the Yukon and the southern part of the Mackenzie District. Such surveys will be extended northward as rapidly as possible.

REVIEW OF 1968 OPERATIONS

Field work was carried out to define two outstanding areas for new national parks, one in the Yukon and another in the southern of the Mackenzie District. The approach in each case was based on attempting to define core areas which would have full national park status, plus national park reserves within which prospecting and mining would be permitted under appropriate controls.

PLANS FOR 1969

Further work will be carried out in the southern part of the Mackenzie District to define a feasible core and reserve area for a second National Park in the Northwest Territories.

NATIONAL AND HISTORIC PARKS BRANCH

Wood Buffalo National Park

Responsibilities: The Branch Operated wood Buffalo National Park in Northern Alberta and the Northeest Territories. This entails provision of services for visitors, protection of Natural Resources, and supervision of permitted resource uses.

Long-term Plans

Further studies by the branch planning division will be carried out in 1969 for the purpose of developing a provisional master plan for the park. No major developments, other than a buffalo management program, will be carried out until the master plan is adopted. In developing the plan, consideration will be given to the possibility of revising the existing park boundaries.

1968 Operations

Capital budget for 1968-69 was \$95,000. The two major items in this were repair of the buffalo management testing corrals and completion of the Nyarling river Warden station on highway #5 in the northwest corner of the park.

Operations and maintenance expenditure for 1968-69 was approximately \$550,000. Of this, \$100,000 was spent on roads and maintenance and crushing gravel for road improvements in 1969-70. Approximately \$350,000 was spent on resource conservation and protection. This included salaries and wages for park wardens, fire lookouts, and labourers assisting wardens. The major operations in resource conservation were buffalo management and forestry protection. In June, a round-up and vaccination program resulted in immunization of 1,300 buffalo against anthrax. Constant aerial surveillance throughout the summer disclosed no evidence of an anthrax outbreak such as occurred in 1967. Forest protection involved eight lookout men and a forestry technician. There were two small fires in the park; both were easily controlled. The balance of the 1968-69 expenditure was devoted to equipment maintenance, administration and miscellaneous expenses.

Plans for 1969

The normal maintenance of park facilities such as roads, campgrounds and buildings will be carried out. It is anticipated that the proposed buffalo management program will be finalized and when this occurs, steps will be taken to repair the abattoir in order to bring it up to an acceptable standard. At the same time it is planned to commence the construction of the large holding fences which will eventually be required to establish a disease-free herd of buffalo in the park. Capital and operating expenses for the buffalo management program in 1969 will be approximately \$250,000 if present plans are followed.

NATIONAL HISTORIC SITES SERVICE

Responsibilities: The Service's responsibilities in the North have been fairly limited in the past. The majority of the suggestions for commemoration of historically important persons, places or events were of a territorial, as opposed to national, nature. Following a thorough review of Yukon history by the Historic Sites and Monuments Board, a number of persons, places and events were identified as being of national historical importance. Their commemoration will be handled by the Federal Government with assistance from the territorial governments where advisable.

In particular, the Service is responsible for the maintenance of the Palace Grand Theatre, the S.S. Keno sternwheeler at Dawson City and the S.S. Klondike and S.S. Casca and S.S. Whitehorse at Whitehorse.

Long-term Plans

Assistance to the territorial governments in their historic site marking program.

Restoration of the S.S. Klondike over a five-year period at an estimated cost of \$238,000. This plan includes restoration, installation of a museum of river transport in the North and if a recently completed feasibility study proves satisfactory, the use of the vessel as the focal point of a museum of Yukon transportation by placing around it examples of other forms of early or unique northern transportation equipment such as an early White Pass and Yukon Railway locomotive, a bush plane, etc.

As a result of its meeting in Dawson City in June 1967, the Historic Sites and Monuments Board of Canada made comprehensive recommendations for the commemoration of the Gold Rush comprising the establishment of a mining museum near Dawson City, the use of the S.S. Klondike as the focal point for a Yukon transportation museum, the possible establishment of an interpretation centre at Lake Bennett to deal with the stories of gold rush trails and of boat and raft building, and the possible preservation of some fourteen (14) buildings.

Because of cost implications of these recommendations, the Department has undertaken feasibility studies with a view to how much of the work is feasible within the confines of Departmental resources. This extensive study is now being examined in detail by the Branch.

Review of 1968 Operation

Maintenance of the Palace Grand Theatre and the S.S. Keno was continued.

Work began on the S.S. Klondike in preparation for restoration.

The S.S. Casca and S.S. Whitehorse were placed on new cribs and fenced to protect them from vandalism. The railway crossing to the sternwheeler was under construction in 1968 and will be completed in 1969.

Plans for 1969

Maintenance of the Palace Grand Theatre and the S.S. Keno will continue and guide service will be provided during the summer months.

Major work on the restoration of the S.S. Klondike will continue during the summer of 1969.

DEPARTMENT OF INDIAN AFFAIRS & NORTHERN DEVELOPMENT

NORTHERN ECONOMIC DEVELOPMENT BRANCH

Responsibilities: The Northern Economic Development Branch is responsible, on behalf of the Minister and the Federal Government, for the effective management of oil and gas, mineral, water, forests and land resources and for developing the economy of the Yukon Territory and Northwest Territories. Its tasks are to seek out and identify all means whereby the economy of the north can be expanded at a more rapid pace, to develop a broad plan of economic progress, and to recommend (and in some instances, manage) specific projects and policies for achieving this objective.

The Branch has the concomitant responsibility for developing all minerals, including oil and gas, on Indian Reserves in the Provinces in order to generate employment and revenue for Indians and Indian Bands, with as full participation of Indians as possible in the planning and execution of the development programs.

Review of 1968 Operations

OIL AND GAS

Oil and Gas expenditures in the Yukon and Northwest Territories exceeded \$30,000,000 in 1968. This is an increase of \$2,500,000 over the previous year. Most of the exploration was carried out in the southern portion of the Territories, on the Eagle Plain of the Yukon Territory and in the Delta area of the Northwest Territories.

Revenue received by the Federal Government for 1968 is considerably higher than that received in 1967.

Yukon Territory

Permit Fees	\$ 86,750.00
Transfer Fees	875.00
Lease Fees	330.00
Rentals	2,809.25
Forfeiture	147,680.76
Bonus	248,615.66
TOTAL	\$478,060.67

Northwest Territories

Licence Fees	\$ 3,198.18
Permit Fees	631,550.00
Transfer Fees	32,930.00
Lease Fees	2,910.00
Rentals	1,431,066.77
Royalties	50,000.00
Forfeiture	394,254.08
Bonus	2,871,080.65
Miscellaneous	1,398.27
TOTAL	\$5,447,791.75*

*Includes estimated 1968 royalty and crown production revenues of \$50,000 from Norman Wells Oil Field.

Oil and Gas expenditures in the Yukon and Northwest Territories have exceeded 30 million dollars in 1968, this is an increase of about two and a half million dollars over the previous year. Most of the exploration was carried out in the southern portion of the Territories and on the Eagle Plain in the Yukon Territory.

Surface geological and photogeological surveys by the oil industry decreased over the previous year, since most of the sedimentary areas have already been mapped by the major land holders. Much of the current work that is being conducted is by consultants for clients holding small acreage blocks, or for non-exclusive type of reports which are sold to several oil operators holding permits in the Territories.

A conglomerate of consulting firms in Calgary organized "Operation Geoquest" in 1968. The project involved assorted mapping programs in the Northwest Territories south of latitude 65°. Basic information was collected by surface geologic surveys, gravity and magnetometer surveys and structure test drilling. Land holders participating in this project could allocate expenditures to permits in the Northwest Territories and Yukon Territory.

A second and more extensive project "Operation Arcticquest" was organized by the same conglomerate of consultants. The geophysical programs will be carried out along the Arctic Coastal Plain and in the offshore to about the 200 meter depth contour. Surface geologic work will be concentrated in Northern Yukon. Participants in "Operation Arcticquest" can allocate expenditures to permits approximately one hundred miles on either side of the coastline.

Seismic activity in 1968 increased by over 50% over the previous year. The magnitude of activity in this phase of exploration forecasts drilling in the future

since it normally takes one to two seasons of seismic exploration to locate suitable drilling sites.

Oil companies concentrated their seismic activity in the southern portion of both Territories and along the Mackenzie Valley to Norman Wells. Three large scale marine seismic programs were carried out in the Beaufort Sea during the fall of 1968.

Imperial Oil Enterprises continued to carry out large reflection seismic programs in the Delta and Tuktoyaktuk areas to locate sites for their current drillers. To the east, on the mainland, Elf Exploration and Production Canada Limited continued a large geophysical program in the Anderson River — Liverpool Bay.

Drilling activity was concentrated in the southern Northwest Territories. The concentration of wells drilled in the southern Territories can be attributed in part to the discovery of prolific oil and gas fields in the Middle Devonian sedimentary sequence of the adjoining sector of Alberta, to the reduction of relatively untested prospective areas in the provinces, and to the start of construction of a year round road in the southernmost Territories. The road will serve to reduce the cost of exploration when equipment and supplies can be moved overland during 12 months of the year.

Though the "Number of Wells Drilled in 1968" and "Footage Drilled" exceeded that in 1967, drilling expenditures for the year were approximately two million dollars lower than in the previous year. The decrease in expenditures can be attributed to the areal distribution of the wells in that about thirty wells were drilled in the great Slave Lake area where the sediments are thin, wells average out to about 3,000 feet, the well sites were accessible to existing roads, thus the average cost of wells decreased significantly over 1967.

Drilling in the Yukon was reactivated by Canoe River Exploration Limited in the Eagle Plain area. The company carried out a two well program, one well was completed as a suspended gas well, the other well was dry and abandoned. In this program, the Company was assisted by a Northern Mineral Exploration Grant, equivalent to 40 per cent of the cost of this exploratory venture.

In the Watson Lake area, a stratigraphic well was drilled to 3,750 feet. No evidence of oil or gas were encountered and the well was abandoned.

In the Liard area, a well, Pan Am Beaver Y.T. G-01, is being drilled in the Yukon Territory, immediately north of the Yukon-British Columbia border, and on the same structure as the completed Beaver River gas wells in British-Columbia.

Since it is only a mile and a half step-out from the gas wells in British-Columbia, the chances of this well encountering the gas reservoir are excellent. A second well, Pan-Am-Shell Merrill J-76, 18 miles north of British-Columbia border is currently drilling at about 5,000 feet. It appears to be located on the north end of the complex structure which contains the Beaver River Pool.

Two wells were commenced in the area of the Mackenzie Delta by Imperial Oil, one of which is in partnership with Shell Oil Canada and British American Oil Co. (now Gulf Canada Ltd.). Both will be completed in the spring of 1969.

Development drilling was activated in the Norman Wells field. Two oil wells were completed on Goose Island. After stimulation, each well is now capable of producing up to 350 barrels of oil per day. A third well was drilled on the dow-dip edge of the field to initiate a secondary recovery program. Up to 15,000 barrels of water are being injected daily to maintain reservoir pressure and to increase production efficiency.

The total acreage under permit in the Yukon and Northwest Territories on December 31, 1968 was as follows:

**No. No. of Permit and Leases and Relevant
Acreage — 31 December 1968**

Permit	No. of Tracts	Acreage
N.W.T. Mainland	2,063	96,707,141
Y.T. Mainland	619	26,376,093
Arctic Islands	3,892	188,358,592
Arctic Coast Marine	230	10,572,226
Total Permits	6,804	322,014,052
Lease		
N.W.T. Mainland	299	1,999,901
Y.T. Mainland	55	186,092
Arctic Islands	—	—
Arctic Coast Marine	—	—
Total Leases	354	2,185,993

Exploration Highlights

Panarctic Oils Ltd. is now in its second year of operations. During the past two years it has acquired 45,229,665 acres of oil and gas permits in the Arctic Islands from over 75 companies and individuals. The company has assumed all the work obligations and is beginning to carry out a systematic program of exploration over the four years to June, 1971. The initial field exploration commenced in March 1968 when a seismograph and a gravity meter survey party were flown to Melville Island. The six month geophysical program was completed successfully with track vehicles assisted by helicopters. Base camps with airstrips were set up at Winter Harbour, Marie Bay, Sherard Bay, and at Rea Point, all on Melville Island. Stock piling of fuel and drilling supplies were established at Resolute Bay, Sherard Bay and Rea Point.

The drilling phase of the program will commence in February of 1969 when two drilling rigs will be flown to Melville Island by a Hercules aircraft. The Arctic Islands drilling program involves the drilling of 17 wells which includes nine deep tests, six medium tests, and two shallow tests.

Other proposed operations for 1969 are geological field surveys and gravity meter surveys in the central Arctic Islands, and seismic programs on Ellef and Amund Ringnes Islands and Ellesmere Island.

Westcoast Transmission Company and Pan American Petroleum Corporation have signed a contract for dedication of Pan American's partially developed gas reserves at Beaver River, three miles south of the Yukon Territory, and at Pointed Mountain in the south-west sector of the Northwest Territories, twenty miles north of the British Columbia Border. The reserves proven and those developed in the Beaver River — Pointed Mountain area are needed by Westcoast Transmission to complement reserves required to guarantee a 25 year life for daily gas delivery commitments.

Two gas wells have been completed in the Pointed Mountain gas pool and a third one is currently near completion in the south sector. A fourth well in the north sector of the pool will commence drilling in the spring of 1969. It is expected that the gas reserves which may be proven at Pointed Mountain will warrant application for export-import licences for an addition of 100 million to 200 million cu. ft. of gas in late 1969 and early 1970. Gas production is expected to commence early in the 1970's.

MINING

The year 1968 saw a continuation of expansion in the Mining Industry that commenced in 1964 when the Great Slave Lake railway was completed.

In the Northwest Territories there were no new mines added during 1968. However, one lead-zinc operation increased its milling capacity from 5,000 tons per day to 8,000 tons per day and a second mine resumed production after a year's shut-down due to a fire that destroyed its crusherhouse and mill.

In the Yukon, two small gold-silver mines came into production and two others had completed their first full year of production.

Total mineral claims recorded in the two territories amounted to 52,892 claims which is an increase of 16,265 over the 1967 figure.

Yukon Territory

Exploration activity in the Yukon during 1968 was not confined to any specific area. There was considerable exploratory work performed in all areas consisting of detailed work on copper, silver, lead and lead-zinc deposits. In addition, prospecting was carried out on an increasing number of tungsten showings. Development work continued at 4 properties, two of these came into production during the year and the other two are scheduled for production in 1969.

United Keno Hill Mines Ltd. continued production at 154 tons of ore per day with mill heads averaging 38.6 oz. of silver, 7.5% lead and 6.5% zinc. Development work continued on the Husky vein on Galena Hill where shaft sinking was in progress. Rehabilitation of the Sadie-Ladue property continued on Keno Hill.

New Imperial Mines Ltd. had its first full year of production, milling at a rate of 2,000 tons per day with mill heads averaging 1.15% copper. The Arctic Chief

orebody was prepared for open pit mining during 1968. In addition, engineering feasibility studies were carried out to determine the possibility of mining the extension of the Little Chief orebody by underground methods. The company produced nearly 12 million pounds of copper during the year.

Arctic Gold and Silver Mines Ltd. brought its gold-silver property into production in September 1968 at a rated capacity of 100 tons per day. Mill heads average 0.52 oz. gold and 14.4 oz. silver per ton. Concentrates are shipped by truck and rail to Skagway, Alaska and thence by ship to Sweden for refining.

Mount Nansen Mines Ltd. brought its gold-silver property into production in September 1968 at a daily rate of 100 tons. Mill head averages 0.50 oz. of gold and 18.0 oz. of silver per ton. Initial production is from the Huestis vein. However, the adjoining Webber vein is being developed as well as the adjacent Brown McDade Property for future production.

Cassiar Asbestos Corporation Ltd. located at Clinton Creek 50 miles northwest of Dawson, reached its planned rate of production (2,500 tons daily) early in 1968. The grade is 6-7% 1/16" to 1 1/8" fibre. The asbestos fibre is shipped to Whitehorse by trucks and then is transhipped over the Whitepass Route to Vancouver.

Venus Mines Ltd. located on Windy Arm of Tagish Lake near Carcross completed 3,500 feet of drifting and raising on two adit levels. The company has announced plans to bring the property into production in 1969. Reported ore reserves are 138,400 tons grading 0.39 oz. of gold and 11.6 oz. of silver per ton.

Anvil Mining Corporation Ltd. located 130 air miles northwest of Whitehorse, continued with development of the open pit and construction of surface plant throughout the year. The property is scheduled to reach production stages late in 1969. Direct capital pre-production expenditures are estimated at \$64 million. Ore reserves are quoted at 63.5 million tons averaging 3.4% lead and 5.7% zinc and just over one ounce of silver per ton. Production will commence at 5,500 tons per day and 368,400 short tons of concentrates will be produced annually. All production for the first eight years will go to two Japanese firms.

Stump Mines Ltd. continued with underground exploratory work on its silver-lead property on the Keza River 120 miles northwest of Whitehorse.

Hart River Mines Ltd. completed 5,400 feet of diamond drilling on its property 80 miles northeast of Dawson. Mineralization consists of irregular banded pyrrhotite and pyrite carrying chalcopyrite, sphalerite and galena. The company expects to spend \$500,000 in 1969 to do further development work consisting of underground drilling on 3 adit levels and approximately 2,000 feet of diamond drilling.

Hudson Bay Mining and Exploration operated three diamond drills on a lead-zinc property at MacMillan Pass on the Canol Road plus an extensive surface exploratory program on a nickel-copper showing covered by 91 claims at Quill Creek, 7 miles west of Mile 1,111, Alaska Highway.

Northwest Territories

There were 44,489 mineral claims recorded in the Northwest Territories in 1968, an increase of 15,867 or 55% over 1967. Part of this increase can be attributed to a minor staking rush late in the year at Artillery Lake where in excess of 8,000 claims were staked by the end of 1968. Exploration activity centered around the copper deposits in the Coppermine area and on Victoria Island. During the latter part of the year considerable interest was displayed in the Keewatin area in the Arctic and Hudson Bay Mining District.

Pine Point Mines Ltd. continued mining high-grade direct-shipping ore until December 1968 in addition to milling at a rate of 5,000 tons per day of milling grade ore. Deposits of direct-shipping ore were depleted by the end of the year. However, total production of lead and zinc will be maintained as milling capacity has been increased to 8,000 tons per day with the addition of a 3,000 ton per day unit to the mill.

The gold producing mines in the vicinity of Yellowknife continued normal production. Value of gold production was down \$1,270.64 to an estimated value of \$13,085,822; this decrease is attributed to the closing of Tundra Gold Mines 150 miles northeast of Yellowknife.

Giant Yellowknife Mines is maintaining its production at 1,000 tons per day – 800 tons from the Giant Mine, and 100 tons per day from each Supercrest Mine and the Lolor Mine which are interconnected with the Giant workings.

Canada Tungsten Mining Corporation is back in production after a year's shut-down due to a fire in 1966 that destroyed its crusherhouse and mill. Production is at 350 tons per day, grading 1.71% tungsten and 0.45% copper.

Terra Mining and Exploration Co. Ltd. completed 2,000 feet of inclined shaft and lateral development and has announced plans to bring its silver-copper property into production in 1969. The property is located on Rainey Lake, 30 miles south of Port Radium.

Coppermine River Ltd. who carried out an \$800,000 exploration program, has reported 4,000,000 tons of ore in its 47 zone, grading 3% copper.

Late in the year Newmont Mining Corporation staked 800 claims on what appears to be nickel mineralization in the Artillery Lake area, 250 miles east of Yellowknife. Other mining companies and individuals have accounted for some 8,000 claims recorded in this area by the end of 1968.

The following table shows preliminary production figures for 1968 and comparative figures for 1967 for the Yukon and Northwest Territories:

YUKON TERRITORY

Mineral	1967		1968*	
	Quantity	Value	Quantity	Value
Gold	17,900 oz.	\$ 675,725	24,957 oz.	\$ 941,128
Silver	3,869,374 oz.	6,701,756	2,061,534 oz.	4,778,635
Lead	15,299,709 lbs.	2,141,959	7,034,890 lbs.	951,117
Copper	7,167,919 lbs.	3,409,779	11,965,800 lbs.	5,755,550
Coal	1,912 tons	15,791		
Zinc	9,476,545 lbs.	1,373,151	4,860,000 lbs.	685,260
Cadmium	94,999 lbs.	265,997	50,000 lbs.	144,638
Asbestos	2,260 tons	406,371	64,000 tons	10,240,000
TOTAL		\$14,990,529		\$23,496,328

*Preliminary figures

NORTHWEST TERRITORIES

Mineral	1967		1968*	
	Quantity	Value	Quantity	Value
Gold	380,304 oz.	\$ 14,356,476	347,012 oz.	\$ 13,085,822
Silver	1,980,228 oz.	3,429,755	3,855,967 oz.	8,938,132
Copper	1,131,126 lbs.	538,077	2,097,800 lbs.	946,108
Lead	254,753,820 lbs.	35,665,535	260,000,000 lbs.	35,152,000
Zinc	419,964,800 lbs.	60,852,900	430,000,000 lbs.	60,630,000
Cadmium	911,400 lbs.	2,551,920	900,000 lbs.	2,565,000
TOTAL		\$117,394,664		\$121,317,062

*Preliminary figures

DEVELOPMENT ANALYSIS

The prime activities of this Section have been concerned with carrying out financial and engineering evaluations of resource developments in the Yukon and Northwest Territories where Government assistance has been requested and in administering programs designed to encourage resource development in the north.

A study to determine the feasibility of a lead-zinc smelter at Pine Point, Northwest Territories, which began early in 1966, was completed as well as a thorough assessment of it and the socio-economic benefits which would result from a smelter. Reports will be made to the public early in 1969.

Financial and engineering evaluations were carried out on several mining developments where assistance for the construction of access roads and airstrips was requested by the companies concerned.

Studies continued during the year on the feasibility of bringing into production a large iron mining project on northern Baffin Island.

Following are descriptions of the various incentive programs and the amounts of the financial assistance awarded under the regulations of the Northern Mineral Exploration Program for the year 1968.

The Northern Roads Program is a 10-year \$100 million program designed to provide roads which connect centres of population, lateral roads through areas of favourable resource potential and roads to specific resource development projects. During the year approximately \$8.9 million was spent on roads in the Yukon and Northwest Territories. In addition, under the Tote Trail Program which is administered by the Territorial Governments, approximately \$188,000 has been provided for assistance in the construction of low standard roads to resource projects.

The Northern Resource Airports Program provides financial assistance on a cost sharing basis for the construction of airports which are intended to provide access to resource exploration and development projects. Departmental commitments for this purpose during the year were approximately \$61,700.

Applications for grants under the Northern Mineral Exploration Program were received from forty-four companies in respect of forty-seven individual programs of mineral and oil exploration. Financial assistance and commitments of assistance amount to \$2,157 million for the year to assist forty-one approved programs. An additional \$3,012 million was provided in the current year for a large oil and gas exploration program in the Arctic Islands.

WATER RESOURCES

During 1968, the Water Resources Section continued working towards the implementation of a proposed Northern Water Rights and Pollution Control Act and Regulations. This legislation is intended to set out basic ground rules for the equitable distribution of the rights to the use of northern water resources among various and often conflicting, development interests. In addition, the proposed legislation is intended to protect the quality of the far northern water resources from levels of pollution which are unacceptable from the public interest point of view.

Also during 1968 another major water power study was undertaken in the Territories. The consulting firm of T. Ingledow and Associates Limited of Vancouver, B.C., carried out investigations which identified major hydro-electric power sites in the Central Mackenzie District and undertook a preliminary technical and economic evaluation of the feasibility of their development.

A start was made during 1968 on a program of northern water resource research. Discussions were held with a number of Canadian universities with the intention of developing co-operative water research projects in the far north.

Finally, the Water Resources Section carried out the Department's responsibility for administering the Dominion Water Power Act and Regulations.

FOREST RESOURCES

During 1968, a new timber harvesting policy was adopted. Operators will now be able to obtain cutting rights to large tracts of timber for periods of five or ten years, with provision for agreement renewal. A guaranteed supply of wood on a long-term basis will justify the companies investing in large, expensive conversion plants.

This new policy has already resulted in the establishment of four timber management areas in the Yukon Territory, each of which will have an average yearly production of 10 million board feet within five years. Further agreements covering the remainder of the merchantable timber in the Yukon and Northwest Territories are pending.

Yukon Forest Service

The Yukon Territory experienced a relatively moderate fire season in 1968; only one short period during mid-July caused any concern. A total of 86 fires were reported. Of these, 77 resulted in the burning over of 18,619 acres in the protected zone. The majority of these fires (84%) were smaller than 10 acres each. The other known nine fires burned an estimated 15,000 acres in the unprotected zone of the Yukon.

Only nine per cent of the Yukon fires were caused by lightning. All of the rest resulted from human carelessness, with children and neglected campfires heading the list.

Timber production during the 1968 calendar year included 4,204,598 foot board measure of lumber; 1,121,800 lineal feet of timber (used almost exclusively by the mining industry); and 7,711 cords of fuelwood. Royalties of \$5,840 were received from the sale of this timber.

The Yukon Forest Service administered forty-three campgrounds in 1968.

Mackenzie Forest Service

The Northwest Territories also experienced a relatively mild fire season during 1968, although the fire hazard remained high throughout the summer on that portion of the protected zone lying north of Wrigley.

Eighty fires burned 304,050 acres in the protected zone and a further thirty-nine fires damaged an estimated 262,900 acres in the unprotected zone. The majority of these fires were caused by lightning.

Timber production during 1968 was as follows: 1,738,400 FBM of lumber; 26,675 lineal feet of timber (used for poles and mine timber); and 575 cords of firewood. The harvest resulted in royalties of \$3,070.00.

The Mackenzie Forest Service maintained a total of 17 campgrounds in 1968.

Canada Lands

In 1968, approximately \$349,000 in revenue was derived from the lease, sale, or other disposal of lands in southern Canada, the Yukon and Northwest Territories.

Over 400 parcels of land were transferred to the administration, management and control of the Commissioners of the Yukon and Northwest Territories to provide a source of revenue for the Territorial Governments and expedite community development.

105 reservations were established to accommodate installations of other Federal Departments in the two Territories which will supply essential services for northern residents, and 74 obsolescent reservations were cancelled in order to permit alternate, beneficial use of the lands for public purposes.

Title research was carried out to ratify departmental ownership of 49 properties, and they are now being utilized productively.

Twenty-two properties of considerable value were acquired by transfer from other Federal Departments, and 17 comparable parcels were made available to agencies at the various levels of government, educational and religious organizations, without financial compensation.

In excess of 30,000 documents and records covering Grants of former Dominion Lands in western Canada were indexed, catalogued and microfilmed, with the result that photocopies of such material as Letters Patent, Métis Scrip, Military Bounty Warrants, South African Veterans' Land Claims, Hudson's Bay Company Notifications and Royal Canadian Mounted Police Land Warrants may be produced.

Fifty-five abstracts of title relating to land settlement were compiled for historical research projects, 101 certified true copies of documents were made available for the same purpose, and thousands of general enquiries on land matters were answered.

Economic Staff Group

The Economic Staff Group undertakes studies related to the development of the Northern Territories. During the past year, the Group undertook various studies and also initiated studies that were carried out on behalf of the Department by consulting firms. The studies were related not only to the development of natural resources, but also to the development of human resources.

During 1968, a public version of the Travacon Research Limited study, that was completed in the latter part of 1967, was published. The objective of the study was to evaluate the costs and benefits which would accrue from the development of a number of possible alternative routes for the movement of resources and other traffic between the Yukon interior and tidewater ports on the Alaska Panhandle.

Final data on the 1967 Manpower Test Survey of the Northwest Territories were produced during 1968. The project was undertaken with the co-operation of the Dominion Bureau of Statistics. The following communities were surveyed: Hay River, Fort Providence, Fort Resolution, Pine Point, and Coppermine. The survey provided data on the educational levels, skills and backgrounds of the residents in

the selected settlements. Initial work involving planning of the Keewatin District Manpower Survey was undertaken in the fall of 1968.

The Economic Staff Group carried out a study on the feasibility of a lead-zinc smelter at Pine Point, Northwest Territories. The technical aspects of the study were prepared by Canadian Bechtel. The report containing an economic evaluation of social aspects and conclusions on the economic viability of a lead-zinc smelter operation at Pine Point, is scheduled to be tabled in the House of Commons in March 1969.

The consulting firm of D.W. Carr and Associates had completed an economic study on the Yukon Territory. This study was commissioned by the government of the Yukon Territory and the Department of Indian Affairs and Northern Development. The original cost of the study was shared equally by the Federal and Yukon Governments. The report contained significant conclusions on the development and growth of the Yukon economy. It outlined proposals for public and private investment in an amount of \$1.4 billion for the next 17 years. The report was tabled in the House of Commons in December, 1968.

During 1968, the Group prepared a paper containing a quantitative examination of the implication of the Carter taxation proposals on northern mining enterprises. A report discussing the development of roads north of Yellowknife was prepared in co-operation with the Department of Energy, Mines and Resources and the Department of Public Works for the Interdepartmental Advisory Committee on Northern Roads. The report discussed proposed alternative routes from the Yellowknife area to the Arctic coast. It was submitted to the Interdepartmental Advisory Committee on Northern Roads in July, 1968.

During 1968, the Economic Staff Group undertook the planning of an Arctic Transportation Study. The study will be carried out in 1969 by the consulting firm of Warnock Hersey International Limited. The study will provide a general examination of problems that have an effect on large volume transportation systems in the Canadian Arctic. It will also indicate the probable form and technology that such a future transportation system in the Arctic will incorporate. Recommendations as to the form of a possible second phase of the study will be included in the report.

During 1967, members of the Economic Staff Group participated in an interdepartmental study investigating the geographic and political aspects of access through the Alaska Panhandle. The final report on the study "The Need for Canadian Access Through the Alaska Panhandle" was completed in 1968, and was submitted for consideration to the Interdepartmental Committee on Pacific Coast Transportation.

Plans for 1969

Oil and Gas

The proposed new Oil and Gas Production and Conservation Act "Bill S-29" received first reading in the Senate on February 4. It is hoped that it will receive final approval by Parliament this year so that the Regulations pursuant to the Act can be utilized for drilling operations in the near future.

Plans are underway by several operators to move marine seismic equipment to the Beaufort Sea area. It is anticipated that five or six operators will conduct individual surveys.

Panarctic Oils Limited will fly in two drilling rigs to Melville Island this spring. Plans are to drill at least five wells on Melville Island before the end of the year.

The contract between Westcoast Transmission and Pan American Petroleum Corporation contains an agreement with respect to construction of a pipeline to extend north from Fort Nelson to the Beaver River area. The pipeline will be constructed so as to take deliveries of gas starting November 1970.

Mining

Yukon Territory

New Imperial Mines are continuing with studies to determine the feasibility of underground mining of extensions of open pit ore zones.

Venus Mines Limited have announced production plans for its gold-silver property on Windy Arm of Tagish Lake near Carcross, Y.T.

Stump Mines will continue with underground exploration work on silver-lead showings in the Ketza River area.

Anvil Mining Corporation is continuing with construction of mill and open pit preparations. Mine and mill is expected to be operational late in 1969. Construction of a new Mine Rescue Station at Whitehorse is expected to commence.

It is expected that the new Yukon Minerals Act to replace the Yukon Quartz Mining Act will be passed at the 1969 Session of Parliament.

Northwest Territories

Echo Bay Mines is to continue underground exploration and development of the three new levels below the 3rd adit level.

Terra Exploration Company Limited, on its silver property on Rainey Lake, 30 miles south of Echo Bay, have brought in construction and mining equipment to continue with underground development. The company has announced production plans.

Pine Point Mines will be mining and milling at a rate of 8,000 tons per day, an increase of 3,000 tons per day. The additional 3,000 tons is gained from the Pyramid orebody.

Con-Rycon-Vol of Cominco, plans to deepen its working below the 4,900 foot level and to continue drilling to the Yellorex property on the 2,300 foot level.

103 Prospecting Permits have been issued under the Canada Mining Regulations with the main interest in uranium in the Keewatin District. These permits cover an area of approximately 18,500,000 acres. A large exploration program is expected to be conducted early in the year.

A complete revision of the Canada Mining Regulations as well as the Mining Safety Rules will be undertaken.

Development Analysis

With Departmental re-organization in 1968, the Section assumed greater responsibilities with regard to administration of the Northern Roads Program and Resource Airports Program. A revision of the Northern Roads Policy will be carried out in 1969.

Work on the proposed Baffinland Iron Mines Limited project will continue. In view of rapidly rising construction costs, a re-evaluation of the project will be necessary since the first feasibility studies were carried out in 1965.

The administration of the Northern Mineral Exploration Assistance Program will continue but with a reduced budget. Amendments to the Regulations governing the Program to make provision for increased employment of northern residents on exploration work are under consideration. In addition to Baffinland Iron Mines Limited, assessments will be carried out on a property in the Coppermine River area and on lead-zinc deposit on Baffin Island.

Forest Resources

Current high timber prices combined with a lack of available wood in other areas of Canada have resulted in a sudden increase in demand for northern timber. Before further large tracts of timber are allotted to forest companies, we plan to make a careful assessment of the resource's potential. To accomplish this goal, we are contracting for one inventory and three feasibility studies which will be conducted in 1969. The areas concerned are the following: the Lower Liard area in the Northwest Territories, the south central portion of the Yukon and the upper Liard River basin in the Yukon Territory. Further studies will be carried out in future years.

The increase in industrial activity in the north has made evident the need for a change in the regulations governing the use of renewable resources. We plan to revise the Territorial Timber Regulations and, with assistance from other Branch personnel, draft a set of regulations which will prevent the needless destruction of our northern renewable resources.

Canada Lands

Continue to administer resource lands in the Yukon and Northwest Territories, together with the residual interest of the Federal Government in many parcels of public lands in southern Canada, and measures are being taken to stimulate more aggressive agricultural, recreational and commercial development of these areas.

At an early date, hundreds of administrative sites in the Northwest Territories, including the buildings and apartment service installations, will be transferred to the management and control of the Commissioner to facilitate integrated local government. Similar action will be taken in the case of sites occupied by educational facilities by the end of the year.

Pursuant to the recommendations of the Carrothers Commission, the interest of the Crown in lands within and encompassing municipalities and settlements is to be transferred to the Governments of the Yukon and Northwest Territories to give them greater autonomy. During 1969, action will be taken to confirm Territorial jurisdiction over such major centres as Whitehorse, Yellowknife, Dawson, and Fort Smith, and the smaller communities will be dealt with over the next three years, in accordance with priorities set by the Commissioners.

Planning for new townsites at Carcross and Vangorda Creek should be completed during the coming year, and additions to existing residential and commercial subdivisions throughout the Territories will also be finalized.

About 210 surveys will be carried out on behalf of the Federal and Territorial Governments and the general public to accommodate installations necessary to meet the increase in mining and oil exploration activities.

A land title review to determine the number of properties in the Provinces which are still under the administration, management and control of the Northern Economic Development Branch will be accelerated. A target of 50 fully-documented abstracts of title should be completed, and the lands will be made available to other Federal, Provincial or Municipal Governments for public purposes first, after which efforts will be made to secure optimum revenue from the lease or sale of the remaining lands and buildings.

Negotiations will be carried out for the acquisition of a number of properties in both northern and southern Canada which are essential for departmental purposes by free transfer from other Federal Departments. Reciprocal arrangements will be made concurrently to implement transfers of some of our own surplus holdings to any such agencies which have continuing requirements for the installations concerned.

Files and records pertaining to resource management in the Northwest Territories and western Canada will be catalogued, indexed and prepared for shipment to field headquarters, land offices and local archives, under the new concept of decentralization of responsibilities. Two major consignments will be completed by the end of the year, and additional microfilm copies of key land control registers will also be made available to officers in the field and the Territorial Government.

The rate of submissions to the Real Property Inventory of Public Works covering lands, buildings and other improvements held by the various Branches of the Department will be speeded up, in accordance with a recent Treasury Board directive.

Economic Staff Group

During 1969, the Economic Staff Group will continue to develop a strategy for regional planning in northern Canada. Studies concerning regional development in selected economic regions — in both Territories — will continue during 1969. The report on the Arctic Transportation Study is scheduled to be published in 1969.

In 1969, the responsibilities of the Economic Staff Group will be expanded to provide basic economic assistance in conservation programs and in the development of human resources in Canada's Northern Territories.

DEPARTMENT OF INDIAN AFFAIRS & NORTHERN DEVELOPMENT

TERRITORIAL RELATIONS BRANCH

TERRITORIAL DIVISION

Responsibilities: Acting for the Federal Government in the negotiation and administration of Federal-Territorial financial arrangements with both Territories.

Reviewing both Yukon and Northwest Territories fiscal and legislative programs and development plans and advising the Deputy Minister on policies relating to the administration of the Territories.

Act as liaison between the Department of Indian Affairs and Northern Development and the Governments of the Yukon and the Northwest Territories in respect to residual federal functions not related to natural resources.

Provision of advisory services to the Yukon and the Northwest Territories in respect to the administration of government in the two Territories.

Co-ordination of the transfer of government functions and services to the Government of the Northwest Territories in Yellowknife heretofore under the jurisdiction of the former Northern Administration Branch.

Long-term Plans

To develop federal-territorial policy and fiscal arrangements with both the Yukon and the Northwest Territories and to assist the governments of the two territories in the exercise of their responsibilities and in developing a more responsible form of government. To assist territorial fiscal programs, legislation and policy proposals.

Review of 1968 Operations

Financial and administrative assistance to the Governments of the Yukon and Northwest Territories was continued. The Division assumed a main role in negotiating Federal-Territorial financial agreements to commence April 1, 1969, for both Territories, provision of advisory services on territorial affairs, and the transfer of federal functions to Territorial jurisdiction in the Mackenzie District to the Commissioner and the Territorial Administration.

Plans for 1969

Plans for 1969 include continuation of co-ordinating services in relation to the transfer of federal functions to the Northwest Territories Government in the Mackenzie District for completion by April 1, 1969, and in the Eastern Arctic by April 1, 1970.

The administration and co-ordination of the two-year financial agreements which expire March 31, 1969. Supervision of one-year financial agreements with each Territory commencing April 1, 1969. Negotiations of agreements commencing April 1, 1970, and to run for one year with the Northwest Territories and for an undetermined period with the Yukon.

THE ADMINISTRATOR OF THE ARCTIC

Responsibilities: To implement in the Arctic District the policies of the Department as directed by the responsible Branch.

Organization

Three Regional Headquarters were maintained. The Keewatin Regional Office at Churchill supervised area offices at Eskimo Point, Whale Cove, Rankin Inlet, Baker Lake, Coral Harbour and Chesterfield Inlet. The Baffin Regional Office at Frobisher Bay supervised area offices at Broughton Island, Cape Dorset, Igloolik, Pangnirtung, Pond Inlet and Resolute Bay. Regional Headquarters for Arctic Quebec continued to operate in Ottawa supervising area offices at Great Whale River (Poste-de-la-Baleine), Port Harrison (Inoucdjouac), Povungnituk, Sugluk (Sagluc) and Fort Chimo.

Engineering and Housing

With the exception of Arctic Quebec and a few minor projects in the Baffin and Keewatin Regions the 1968 construction program was undertaken and controlled by the Branch Construction Section.

Most of the projects planned for 1968 in Arctic Quebec were completed including 17 low rental houses, garages, powerhouses, educational classrooms, fish filleting plant and staff houses.

In the Baffin and Keewatin Regions renovations to approximately 50 resale units were completed and 44 resale units were purchased back from the owners. Road construction from Snafu Beach to the settlement of Coral Harbour presented many difficulties and has been carried over into the next year for completion. Other road construction accounted for only a minor portion of the construction program.

Improvements to airstrips or new emergency airstrips were completed in the communities of Grise Fiord, Arctic Bay, Igloolik, Pond Inlet, Cape Dorset, Clyde River and Pangnirtung.

Site development and community planning projects were undertaken in the settlements of Frobisher Bay, Cape Dorset, Broughton Island and a survey was carried out on the North Camp, Belcher Islands.

Electrical Power

Additional and replacement diesel generators were installed at various settlements resulting in increased power capacity and improved services.

The Department assumed responsibility to supply power to the community of Repulse Bay. N.C.P.C. assumed responsibility to supply power at Chesterfield Inlet and Baker Lake.

Municipal Services

The planned heating oil program suffered severe setbacks during the year and remedial action was taken to ensure that a year's supply of oil was available at all

sites. A contract was under negotiation with Shell Oil Company to provide heating oil in all settlements of Arctic Quebec together with Cape Dorset and Lake Harbour in the Baffin Region.

Improvements in water supply services have been effected by contractual arrangements. Additional water equipment in the form of muskey tracked tankers were provided at various settlements and mobile tanks to others.

Plans for 1969

Completion of reservoirs is scheduled for Pangnirtung, Eskimo Point and Fort Chimo.

Most of the major projects in the Baffin and Keewatin Regions will be undertaken by Technical Services. Arctic District will be responsible for all projects in Arctic Quebec and some of the smaller settlements in the Baffin Region. Construction is planned for 20 low rental houses, 5 staff houses, relocation of 10 houses from Apex to Ikaluit in Frobisher Bay and the renovation of 50 resale units. Site development will be planned for Belcher Islands, Broughton Island and all sites in Arctic Quebec.

The power plants at Broughton Island will be replaced by 2 -100 KW diesel generators. The Hall Beach power plant will also be replaced by 2 new 100 KW diesel generators. Synchronizing equipment will be installed and the capacity of the power plants at Grise Fiord and Arctic Bay will be doubled. A new power distribution system will be built at Belcher Island North and a powerline extension has been planned for Ivuyivik.

It is further planned to consider a development study for Belcher Island as apparently this community lacks many of the necessary services required for northern living. A discussion will take place concerning the provision of municipal services in the community together with a possible construction of an emergency airstrip if funds and equipment can be made available.

The construction program for 1969 includes erection of 2 - 2000 BBL tanks at Clyde River. The erection of the 2 - 200 BBL tanks started last year at Arctic Bay. Broughton Island and Grise Fiord is scheduled for this year along with an additional 4000 BBL tank for Arctic Bay and Broughton Island.

The erection of these tanks will provide each settlement in the Eastern Arctic with bulk storage facilities capable of holding approximately 2 years' supplies of oil.

Planning and design of water systems at Port Burwell and Clyde River is also scheduled for 1969.

Education 1968

In 32 schools, 128 elementary classrooms, one high school classroom, 18 special classrooms and six vocational shops were in operation. The total enrollment was 3096 pupils of whom 2842 were Eskimos, 53 Indians and 201 Whites.

In addition 447 students attended the Duke of Edinburgh-Shocol in Fort Churchill(a Province of Manitoba Academic Public School teaching grades kindergarten and up

and operated by the Department). The enrollment of 447 students was broken down as follows: 61 Eskimos from the Northwest Territories and Arctic Quebec, 8 Indians and 378 others. The school at Padloping Island was closed and a school opened at Repulse Bay.

The enrollment in the small hostels in the Northwest Territories was reduced because of the introduction of the new Eskimo Rental Housing Program.

Over 150 Eskimos attended trade or occupational courses in Southern Canada during 1968. Two hundred Eskimos were enrolled in the Churchill Vocational Centre at Churchill. In June 1968, the second class of Eskimos graduated from the C.V.C. The majority of these graduates went on to further advanced training in Southern Canada. The relocation of Eskimos continued to Guelph, Ontario.

Twenty-four students were enrolled in academic up-grading classes in Southern Canada and ten Eskimo students attended regular high schools.

A new Adult Education Centre was established at Frobisher Bay. Two full time teachers were engaged in providing academic up-grading instruction for adults.

There were approximately 60 "day release" students enrolled, and 15 full time students. The "day release" students were allowed by their employers to attend the school one day per week provided the employee voluntarily spent two evenings per week at the school. The current grade range was from Grade I to Grade XI, the age range of students from 16 years to almost 50 years. All the students were Eskimo adult men and women.

A new Eskimo-English bilingual newspaper, called "The Listening Post", was established for the Baffin Region. Along with "New News" in the Keewatin Region, these papers provided Eskimo readers with news of interest and a forum for expression of native concerns and opinions.

An instructional course for members of Eskimo Co-operatives was developed, tested for presentation in appropriate communities of the Baffin Region. The course explained the development of trading and business and continued through to an explanation of the functioning of a Co-operative and how members could participate to the fullest. All text materials were prepared in Eskimo syllabics. All instruction given in the Eskimo language.

Adult Housing Education continued with the major emphasis being placed upon the "home management" instruction for Eskimo housewives. Training workshops were held in some settlements to help the Local Housing Associations to fulfill their duties more effectively.

Many short courses on a wide range of topics were conducted in settlements throughout the District. In addition programs to involve Eskimo parents more closely in the school life of their children were undertaken in four settlements.

Plans for 1969

In June 1969 the first Eskimos will be placed in employment at Alert, N.W.T. Two full time vocational counsellors will be on staff in Ottawa and one in Winnipeg.

Industrial

Resident Resource Development Officers were posted to the Belcher Islands and Repulse Bay and under their supervision the Resource Harvesting Programs in these areas were stepped up. Elsewhere resource harvesting activities were continued. The fall seal fishery project at Port Burwell produced 1,400 seals in November. Organized char fisheries throughout the District realized their quotas and most of the produce was sent south for marketing. The Rankin Inlet cannery again had a successful year. At Whale Cove, 200 Beluga whales were processed for human consumption and the waste used in an experimental hog raising project at Rankin Inlet. A filleting plant was constructed at Port Burwell to produce annually an average of 20,000 pounds of cod fillets.

Soapstone for the production of carvings was mined at the Belcher Islands and Baffin Island and the mainland of Keewatin. On the Belcher Islands and at Lake Harbour local soapstone and mineral deposits were staked on behalf of the co-operatives and development groups.

The canoe project at Great Whale River produced an average of one 24 foot canoe weekly.

Five Arts and crafts Production Centres operated under the supervision of crafts officers and 12 were supervised by other personnel. Carving and small sew goods and items were emphasized. The program was supplemented by the production of authentic models of artifacts and increased production of Eskimo designed garments.

A co-operative conference was held at Frobisher Bay in March and steps were taken toward the organization of a Federation of Eastern Arctic Co-operatives when a continuing committee was elected. Its purpose to carry out pre-organization work among the various co-operatives in the Baffin and Keewatin Regions. Guidance to co-operatives in Arctic Quebec was taken over by La Fédération des Co-opératives du Nouveau Québec.

The departmental tourist camp at Baker Lake was sold to a private entrepreneur and the camp at Rankin Inlet leased to a private individual who now plans to establish a motel-hotel type of operation. A camp was established and opened at Clearwater Fiord in the Pangnirtung area. A sports film and writers tour was carried out in this area during July. In August the Prime Minister and party visited the Camp.

Plans for 1969

Resource harvesting activities in the Cumberland Sound, Belcher Islands and Repulse Bay areas will be expanded. A major winter fishing project is to be planned for the Keewatin Region to supply trout and whitefish to the cannery and whitefish for retail on southern markets. The activities of the Rankin Inlet Industrial complex will be expanded to include commercial hog raising and experimental market gardening using greenhouse and open bed methods.

The Akudlik Crafts outlet at Churchill, Manitoba will be turned over to Canadian Arctic Producers early in 1969.

A knitwear industry will be established in Frobisher Bay in early August to produce sweaters for southern retail markets.

The Co-operative Continuing Committee will continue to visit all communities in the North Baffin Area and will hold follow-up meetings among the larger Co-operative groups in Southern Baffin Area. The committee will also visit the Co-operative groups in the Keewatin Region.

The tourist responsibilities of the Arctic District will be turned over to the Government of the Northwest Territories on October 1, 1969. The Coral Harbour community plans to establish transient facilities to accommodate 40 guests in housekeeping type of accommodation.

A guide training course is to be given for the Belcher Islands Eskimos at Ilkalu Lodge on George River, Quebec.

To continue the development of Pangnirtung – Clearwater Fiord Tourist Camp to the level it can be taken over by private entrepreneurs.

Review of 1968 – Welfare

Inability to recruit trained social workers continued to be a major problem and made it impossible to extend professional social services to all residents of the Eastern Arctic. This shortage of staff had an adverse effect on the child welfare program and it was not possible to extend services to an ever increasing number of children in need of better care. An example of the inability to come to grips with the problems of children is relative to the difficulties encountered in constructing a Children's Receiving Home at Frobisher Bay.

As there was no noticeable improvement in the total economic situation in the Eastern Arctic, social assistance increased and in Arctic Quebec in particular.

Plans for 1969

Recruit welfare staff who do not have professional training in social work into existing social work positions. To make a start on the construction of the Children's Receiving Home at Frobisher Bay.

DEPARTMENT OF JUSTICE

DEPARTMENT OF JUSTICE

Responsibilities: Giving legal advice, preparing Draft Ordinances, and advising and assisting on the administration of justice in the Territories, including the organization and maintenance of territorial courts of civil and criminal jurisdiction; the appointment of judicial officers, Justices of the Peace, Magistrates, and Juvenile Court Judges; the direction and conduct of court proceedings on behalf of the Crown, including prosecutions under the Criminal Code and the Territorial Ordinances.

Review of 1968 Operations

Legal advice on a number of problems was given. Draft Ordinances were prepared. Criminal proceedings were conducted by Crown Counsel, when necessary, before the respective superior courts, Justices of the Peace, and Police Magistrates, the last-mentioned also acting where appropriate as Juvenile Court Judges.

Proceedings which were not held in the larger centres were dealt with by local Justices of the Peace or when appropriate by the Magistrates and Superior Court Justices on circuit. The day to day administrative duties respecting the courts were carried out by the clerks of the court and sheriffs. Action was taken to implement many of the recommendations contained in the Morrow Reports re the Administration of Justice in the Hay River area of the Northwest Territories.

Plans for 1969

To continue to discharge the Departments's functions as outlined above without substantial change.

CANADA DEPARTMENT OF LABOUR

CANADA DEPARTMENT OF LABOUR

Responsibilities: Conciliation and other services for maintaining good industrial relations; administration of the labour standards legislation, fair wages policy, fair employment practices, and female employees equal pay legislation; sale and administration of government annuities; compensation to government employees for occupational injury or illness; surveys of wage rates, hours of labour, and other working conditions.

Long-term Plans

Normal planning to meet responsibilities.

Review of 1968 Operations

Industrial Relations

Conciliation and Arbitration Proceedings: Three industrial disputes were mediated involving companies and trade unions in the Yukon Territory. Four disputes were mediated in the Northwest Territories.

Representation Proceedings

The Canada Labour Relations Board processed 34 applications from trade unions for the certification of bargaining agents for units of employees of companies operating north of the sixtieth parallel. Twenty-nine of the applications affected units of employees in the Yukon Territory, four affected units of employees in the Northwest Territories and one affected a unit of employees covering locations in both the Yukon and Northwest Territories. The Board also processed one request for the review of an earlier decision affecting a unit of employees in the Yukon.

Accident Prevention and Compensation

Claims of Federal Government employees, usually employed in the Yukon and Northwest Territories, for compensation for occupational accidents or diseases were received in the Branch and forwarded to the Workmen's Compensation Board of Alberta for adjudication and payment under a federal-provincial arrangement. A total of 526 claims was received and disbursements were \$111,365.00.

Annuities

Approximately 250 Government Annuities are in force in the North. Servicing contracts and other business relating to Government Annuities were carried out by correspondence.

Fair Wage Schedules

Sixty-five "Fair Wage" schedules in the Northwest Territories and forty-one in the Yukon were established for Federal Government construction contracts. Also there was issued one schedule for service contracts in each of the territories.

There were 26 inspections made in the Northwest Territories and 4 in the Yukon Territory under the Fair Wages and Hours of Labour Act. Wage adjustments were collected in the amount of \$259.37 and distribution made to ten employees.

Economics and Research

The Economics and Research Branch conducts two annual surveys of employers in Canada, one on wage rates, salaries, and standard hours of labour, the other on working conditions. The surveys included twenty-five establishments in the Yukon Territory and twenty-six in the Northwest Territories. These two regions were also included in a special survey on the distribution of employees by wage and salary rates in industries under federal jurisdiction in connection with the Canada Labour (Standards) Code. The branch also maintains a file of collective agreements covering employees in these areas.

Plans for 1969

Normal operations.

**DEPARTMENT OF
MANPOWER & IMMIGRATION**

DEPARTMENT OF MANPOWER AND IMMIGRATION

Responsibilities: The fundamental purpose of the Department is to further the growth of Canada through the optimum development and utilization of our manpower resources by promoting the effective and rapid matching of men and jobs, recruiting and admitting suitable immigrants from abroad, and providing, through the provinces and industry, for occupational training as required.

Long-Term Plans

The services of Canada Manpower Centres will be made available to people either in the communities where they live or as close to them as is practically possible. Sub-offices and itinerant services are planned for smaller communities, including frontier towns and Indian settlements.

A very important long range program, already underway in the Department's northern offices, is to determine the manpower needs of all northern employers and to make every effort to arrange for suitable training courses for northern workers so that their job qualifications will be acceptable to these employers.

Review of 1968 Operations

There are two full-time Canada Manpower Centres in the North. One is located at Yellowknife and serves the Northwest Territories while the other, at Whitehorse, is responsible for the Yukon Territory. In addition, itinerant service is provided to Inuvik, Coppermine, Cambridge Bay, Fort Smith and Hay River from Yellowknife. At Frobisher Bay part-time assistance is obtained from an officer of the Department of Indian Affairs and Northern Development.

Northwest Territories

During the year a total of 2,074 clients were assisted by the Yellowknife Canada Manpower Centre. For worker clients these services included counselling and referral to employment and training, as well as mobility assistance. For employer clients assistance was provided in filling job vacancies.

Training courses were made available for skill upgrading, the operation of heavy equipment, oil well drilling, navigation and business education. Some clients were referred to apprentice training.

In the case of mobility assistance, this was utilized by clients to travel to other areas in order to take training, investigate employment opportunities, or relocate because of their acceptance of an employment offer.

Effective relationships have been established between the Department of Manpower and Immigration and the new Territorial Government at Yellowknife. For example, the Yellowknife Canada Manpower Centre assisted the new government in recruiting people for their northern positions.

Yukon Territory

The Canada Manpower Centre at Whitehorse assisted 3,518 employer and worker clients in 1968. Services provided were similar to those at Yellowknife.

To learn more about the activities and plans of employers in the area a two year program of contacts was started. All mining and transportation industries were visited during the year. As a result of this work courses in basic mining, prospecting and heavy truck driving have been established in co-operation with the vocational school and the Chamber of Mines.

Frobisher Bay

Through the efforts of the Indian Affairs and Northern Development Officer 232 clients were assisted in 1968.

Immigration Activity

During 1968 a total of 195 persons admitted to Canada as immigrants gave their destination address as being either the Yukon or the Northwest Territories. Of this number, 113 were destined to the labour force and the remainder were dependents.

Plans for 1969

Northwest Territories

The Yellowknife Canada Manpower Centre plans to contact all 350 employers in their area to learn their manpower requirements. Approximately 400 students will be contacted in a student employment counselling program. In 1969, the first training-in-industry program will be started. Itinerant service to the more northern centres will be maintained. Further meetings are planned with the Territorial Government on the development of manpower programs in the North.

Yukon

Additional research will be undertaken on local industry manpower requirements with priority being given in 1969 to the construction and service industries. Further efforts will be placed on providing more effective services to people of Indian origin. The Department will again purchase upgrading and skill training to meet identified needs of employer or worker clients.

Frobisher Bay

Assistance and guidance will be provided to the Indian Affairs and Northern Development officer who, as mentioned, performs manpower functions on a part-time basis for the Department of Manpower and Immigration.

**DEPARTMENT OF
NATIONAL DEFENCE**

DEPARTMENT OF NATIONAL DEFENCE

CANADIAN ARMED FORCES

Responsibilities: Support of Canada's External and Defence policies in the North by contributing to the maintenance of sovereignty.

All aspects of maritime, land and air defence of the North. In some areas of the North, these tasks are done in cooperation, or shared, with the USA under joint agreement.

Defence mapping of the North in cooperation with the Department of Energy, Mines and Resources.

Provision of Search and Rescue Services and assistance to other Government and foreign agencies in areas where normal commercial services are not available.

Research into the problems of Arctic communications techniques and equipment.

Long Term Plans

The Department of National Defence is reassessing its objectives and activities in the Canadian North in the light of increased government and commercial activities. This reassessment may result in increased Canadian Forces activity consistent with the Department's responsibilities and the resources available. Research programs will continue.

Review of 1968 Operations

Maritime Forces

No Naval ships operated in Arctic waters during 1968. Two Naval clearance diving teams assisted in both Eastern and Western DEW Line re-supply operations during July, August and September. Maritime patrol aircraft carried out routine patrols.

Land Forces

No major land operations were conducted in the North in 1968. An exercise, OPEN WINDOW, was conducted at Fort Churchill from 2 to 9 March. The aim of the exercise was to study tactical problems of Arctic Warfare, to evaluate newly introduced short range radio sets for tactical communications in the Arctic and to conduct limited field trials on certain land vehicles.

Air Forces

Four major searches, each entailing more than 100 flying hours, were conducted north of the 60th parallel. Four re-supply airdrops involving six C130 aircraft sorties were conducted in support of a British Trans-Arctic Expedition. Canadian Forces officers and men continue to participate in the operation of the DEW Line.

Communications

Research operations at Churchill, Manitoba and Whitehorse, Yukon Territory, were suspended and the stations closed during the summer of 1968. Operations at Canadian Forces Station Alert remained as in other years with construction and maintenance projects undertaken during the year amounting to approximately \$150,000.00. At Canadian Forces Station Inuvik, 65 additional personnel were moved into the area. Construction work on 42 married quarters and enlargement to facilities for single personnel was completed.

Mapping and Charting

The Mapping and Charting Establishment completed the field survey operation for the production of site record drawings at Alert, N.W.T.

Plans for 1969

Naval clearance diving teams will continue to support DEW Line re-supply operations and Maritime aircraft will continue the Arctic patrols.

Land force activities related to problems of northern operations will increase in tempo in 1969. One battalion group size exercise is tentatively scheduled for the month of December. The location is yet to be decided. In addition a mountain training exercise will take place in South Western Yukon Territory in June 1969.

An additional three airdrops to the British Trans-Arctic Expedition are anticipated before the Expedition reaches its Spitzbergen Island destination in the summer.

Communications research activities will be continued at their present established level for the foreseeable future. Plans are being developed for the construction of more permanent type installations at Alert, N.W.T. Construction and maintenance projects estimated at a cost of \$391,000.00 are planned for 1969.

Information Related to Government Employment in the North — Annex B

The Canadian Military establishment in the North consists of a total of 397 all ranks broken down as follows:

	<u>Offrs</u>	<u>ORs</u>	<u>Total</u>
a. CFS Inuvik	5	195	200
CFS Alert	4	173	177
b. DEW Line (Canadian Element)			
Cape Dyer	2	3	5
Hall Lake	2	3	5
Cambridge Bay	2	3	5
Caoe Perry	2	3	5
	<u>17</u>	<u>380</u>	<u>397</u>

Seven civilians are included on the year-round establishment at CFS Inuvik.

Although not directly employed by DND, approximately 600 civilians are employed by Federal Electric Corporation under contract to the United States Airforce in the operation of the DEW Line. Of these, 97% are Canadians and approximately 60 are Northerners. A breakdown of the trades and specialties as at October 68 is contained in Annex A.

ANNEX A

STATUS OF DEWLINE PERSONNEL EMPLOYED IN CANADA

OCTOBER 1968

CATEGORY	TOTAL US	TOTAL CAN	TOTALS	% US	% CAN
Supervisors	7	47	54	13	87
Radian Cryptos	8	—	8	100	---
Clerk	--	14	14	---	100
Clerk, Network Control	--	8	8	---	100
Operator, Switchboard	--	5	5	---	100
Operator, TTY	--	7	7	---	100
Baker	--	3	3	---	100
Chef	--	24	24	---	100
Cook	--	6	6	---	100
General Helper	--	14	14	---	100
Assistant Cook	--	15	15	---	100
Radianian	--	125	125	---	100
Radianian, Lead	--	20	20	---	100
Carrier Tech, Lead	--	1	1	---	100
Carrier Tech	--	15	15	---	100
Instrument Tech, Lead	--	3	3	---	100
Instrument Tech	--	5	5	---	100
Radio Tech, Lead	--	1	1	---	100
Radio Tech	--	8	8	---	100
Radianian, Sector	--	5	5	---	100
Supply Specialist	--	21	21	---	100
Supply Specialist, Jr	--	6	6	---	100
Supply Specialist, Lead	--	4	4	---	100
Transportation Specialist	--	4	4	---	100
Mechanic, Sector	--	22	22	---	100
Mechanic, DLM	--	7	7	---	100
Mechanic, Station	--	80	80	---	100
Mechanic, Lead	--	10	10	---	100
Laborers	--	60	60	---	100
Janitor	--	7	7	---	100
Special Line Assignment	2	8	10	20	80
SUB-TOTALS	17	555	572	3	97
DEW OFFICE WINT	3	34	37	8	92
GRAND TOTALS	20	589	609	3	97

NOTE: There were 18 Canadian students at Streator.

DEFENCE RESEARCH BOARD

Responsibilities: To bring scientific knowledge and experience to the assistance of the Armed Services in solving problems of military operations in high latitudes. To sponsor and undertake research and technical projects of particular assistance to the Armed Services.

Long-term Plans

Research projects of two main types will be conducted: basic studies in the laboratory, and applied studies or field investigations. Almost every aspect of science is involved, with emphasis on factors, particularly cold, affecting the behaviour of man and his machines, and the physical sciences affecting communications, movement, and navigation in and under the sea, on land, in the air, and in outer space.

Review of 1968 Operations

The Defence Research Board conducted research projects on arctic and cold-weather problems through its establishment in Ottawa, Toronto, Dartmouth, Esquimalt and Valcartier. It also supported and coordinated research in the north by means of grants and contracts to universities, government agencies, and non-government research organizations. Close collaboration was maintained with research and development agencies in other countries, especially the United States and Britain.

Radio Physics

The telemetry station at Resolute Bay continued to record data from the three Canadian Satellites Alouette I, Alouette II and ISIS I. Sounders, particle counters and other instrumentation on the spacecraft provide data for extensive studies of the Arctic atmosphere. The Department of Transport supplied four of the operating staff for the station. One other technician was under contract to the Defence Research Telecommunications Establishment (DRTE – now Communications Research Centre).

DRTE continued the studies of the lower ionosphere over the Canadian Arctic. Several techniques are employed (1) low frequency propagation (phase and amplitude recording) over links below, across and above the auroral zone; (2) partial reflection at vertical incidence of high frequency (HF) high power high antenna gain transmissions from the ionized regions of interest; (3) measurement of the changes in galactic noise at a frequency which penetrates the ionosphere (30 MHz riometer) and (4) HF radio propagation experiments carried into the ionosphere by rockets.

Phase and amplitude recordings of VLF and LF waves propagated over a number of high-latitude paths below, across and above the auroral zone were routinely made. These include recordings at Ottawa of 16 kHz transmissions from Rugby, 77 kHz transmissions from Thule and 10.2 and 13.6 kHz transmissions from the OMEGA stations at Trinidad and Aldra, (Norway); recordings at Churchill of 80 kHz transmissions from Ottawa, 77 kHz transmissions from Thule, and 16 kHz transmissions from Rugby; and recordings at Resolute Bay of 77 kHz transmissions from Thule. The 80 kHz transmitter at Ottawa was operated and frequency controlled by DRTE, and the USAF 77 kHz transmitter at Thule was controlled in

frequency by equipment supplied by DRTE; The purpose of the experiments is to study high-latitude disturbances which disrupt HF communications. Military and civilian agencies are interested in these studies for many other purposes; i.e., the man in space programme, the NASA lunar orbiter programme, long-range radio navigation which depends on VLF propagation over long paths.

The fixed-frequency "partial reflection" sounders installed at Ottawa, Churchill and Resolute Bay continued in operation. The equipments at Ottawa and Resolute Bay have been automated and data are recorded digitally on an incremental tape recorder, which permits continuous operation of the experiment for synoptic studies. Two frequencies 2.66 and 6.275 MHz are employed at Ottawa and Resolute Bay using large antenna arrays (40-dipole and 128-dipole arrays at Ottawa and 4-dipole and 40-dipole arrays at Resolute Bay). The Churchill station employs a single frequency, 2.66 MHz, a 4-dipole antenna array and film recorder. The station will be updated in 1969 to include digital data recording and a 144-dipole array for operation on 6.275 MHz. This will permit studies of the disturbed ionosphere, particularly at times of NRC rocket launches from Churchill Research Range.

The chain of riometers, radio receivers recording the intensity of radio noise at 30 MHz from the galaxy, continued in operation. These instruments provide a measure of changes in ionospheric absorption at times of severe ionospheric disturbance. Riometers are operated at Ottawa, Val d'Or, Moosonee, Ft. Churchill and Resolute Bay. Frequent requests are received for riometer data, particularly for data at Ft. Churchill for use with data obtained from rocketborne experiments.

A BB III rocket was launched at Resolute Bay in October 1968 carrying a DRTE propagation experiment and NRC and University of Calgary experiments. Two rockets were launched by GSFC at Resolute Bay in August 1968, backed up by DRTE ground-based partial reflection observations, and one rocket was launched at Ft. Churchill instrumented by the Southwest Centre for Advanced Studies, which was similarly supported by ground-based partial reflection observations. The rocket in fact carried, besides other instrumentation, a receiver for reception of the signals emitted by the partial reflection sounder.

The Resolute Bay - Ottawa CRC SSB/HF communication link, in support of the above mentioned research at Resolute, has been updated with modern communication equipment. A disc-cone antenna, not commonly employed at HF, on the roof of the CRC Laboratory has confirmed that high gain directional antenna systems are not necessarily the best to employ for long circuits unless particular attention is given to maintaining radiation angles less than 10°. The disc-cone antenna, besides its desirable broad-band characteristics, has good radiation at angles approaching 0° elevation.

Experimental equipment was built and flown on 14 rockets launched during 1968 at Fort Churchill, Manitoba, by the National Research Council. The experimental equipment can be divided into three broad categories. One experiment employs a specially designed electron spectrometer that measures the energy and flux density of auroral electrons in the energy range from 30 to 10,000 electron volts. Flights of this instrument explored the flux of electrons during relatively quiet conditions, as well as during major auroral displays. It was also employed on a payload designed primarily to measure electric fields in the ionosphere. A second experiment observes the intensity of auroral luminosity both in the visible and vacuum ultraviolet regions

of the electromagnetic spectrum. It has been found that on occasions the intensity of auroral luminosity in the ultraviolet is comparable to that of solar radiation. The auroral radiation in the vacuum ultraviolet region of the spectrum represents a significant fraction of the total auroral radiation. Both the electron spectrometer and the vacuum ultraviolet detectors must use space vehicles because the radiations of interest do not penetrate to ground level. A third experiment employs a very low frequency receiver to observe the natural emissions from the ionosphere in this frequency band, and a stimulus circuit that excites some of the ion resonances of the ionospheric plasma. This experiment is very similar to one carried by the ISIS-1 satellite. Some of the rocket flights of this experiment were arranged to coincide with a pass of this satellite.

Geophysical and Biological Research in Northern Ellesmere Island

Field parties were based at Tanquary Camp in northern Ellesmere Island from early May until late August. Support was provided by Canadian Forces C 130 Hercules aircraft from the south to Eureka and Alert, thence by light aircraft under commercial charter. For varying periods a total of twenty-eight scientists and assistants were in the field, eleven of whom were working under Defence Research Board contracts with McGill University. The camp was resupplied and personnel were evacuated by the CCGS *John A. Macdonald* in late August.

From mid-May to mid-June four scientists from the McGill University Ice Physics Group completed albedo measurements of the sea ice surface near Tanquary Camp under pre-melt and melt conditions, and also conducted measurements of acoustic attenuation in sea ice. In the same period twenty-four oceanographic stations were occupied in the mouth of Nansen Sound and near the junction of Eureka Sound and Greely Fiord. Bathymetric profiles were taken across the mouths of Nansen and Eureka Sounds, where tidal records were also made. Oceanographic work was continued in Disraeli and Tanquary fiords during July and August. Snow and ice studies that have a direct bearing on the climatology of the area were continued on the Per Ardua Glacier and on the Ward Hunt Ice Shelf, in cooperation with the Glaciology Sub-division, Department of Energy, Mines and Resources, and the Surveying Engineering Department, University of New Brunswick. At Hazen Camp facilities were provided for a group of four scientists from the Department of Entomology, University of Alberta, to carry out entomological studies as part of the Northern Insect Survey.

Under-ice Acoustics

Two aspects of underwater acoustics research in the Arctic were pursued by DREP during 1968. First, all but one of the recording instrument packages (RIP's) which were installed on the sea floor of the Archipelago one year ago, were recovered during August and September using the CCGS *Labrador*. Secondly, under-ice acoustic transmission measurements to support sonar system research were made in M'Clure Strait, southwest of Melville Island during April and May from a camp established on the sea ice using Polar Shelf air support.

The summer voyage of CCGS *Labrador* was especially significant for two reasons. For the first time a year's time-series measurement of underwater noise spectra were obtained following the successful recovery of four out of five half ton RIP units.

The fifth RIP unit, which was installed on the bottom of Baffin Bay, was crushed by a large iceberg grounded in 1400 ft of water on its site. Also, for the first time, a two-man deep submersible vehicle, PISCES I, was operated in the ice-covered waters of Norwegian Bay and M'Clure Strait. A contract for rental of the PISCES was arranged by the Arctic Institute of America and funded by DRB, FRB, DEMR and the US/ONR. PISCES was airlifted from its base in Vancouver to rendez-vous with Labrador in Thule by C.F. Air Transport Command and later flown back. The uses of PISCES were primarily for exploration in oceanography, bottom geology and ecology and for under-ice acoustical backscattering measurements.

Environmental Biology

Research in certain biological problems of cold environments has continued at Defence Research Establishment Toronto although interests have broadened to include some aspects of hot environments. The influence of low temperatures on the susceptibility and resistance of the body to infection is currently under study, and evidence suggests that prolonged exposure to cold does result in altered immunological reactivity in the body. This work is continuing. Attention is also being given to the effects of combined cold and altitude on the body, in order to explain the decrease in resistance to cold that occurs at altitude.

Grants and Contracts

A number of extra-mural studies were supported by grants and contracts with universities and other non-government agencies.

Grants

- (1) To McMaster University for a study of methods of interpreting surface and sub-surface conditions in muskeg from air photographs.
- (2) To McMaster University for research on consolidation of peat under load.
- (3) To McMaster University for research on the dynamic response of a muskeg surface.
- (4) To McGill University for research on the engineering properties of frozen soil.
- (5) To McGill University for a study of deformation of ice at high reduction and strain rates.
- (6) To Laval University for a study of the law of fracture of ice under triaxial loading.
- (7) To the Arctic Institute of North America for a planning project for a study of the North Water.
- (8) To Victoria University for model studies of reverberation from sea ice.
- (9) To McGill University for research on wind and temperature characteristics of the stratosphere.

- (10) To York University for work on the reactions of the constituents of the upper atmosphere.
- (11) To the University of Western Ontario for research on the physics of the troposphere as related to UHF radio transmissions.
- (12) To the University of Western Ontario for studies on VHF radio wave scattering in the ionosphere.
- (13) To the University of Western Ontario for support of ionospheric studies using satellites.
- (14) To the University of Toronto for studies of hypothermia and endocrine function, the biochemical mechanisms involved in cold adaption, and the effects of cold on pharmacological reactions.
- (15) To the University of Manitoba for studies of vasospasm due to cold.
- (16) To Laval University for a study of circulatory adaption to cold stress.
- (17) To the University of Western Ontario for investigation of changes in thermal receptors after cold acclimatization.
- (18) To the Research Institute of the Hospital for Sick Children, Toronto, for studies on hypothermia and rewarming shock.
- (19) To the University of Alberta for research on the flight range of biting flies.
- (20) To Queen's University for research on the reactive principles and specificity of bites of bloodsucking arthropods with particular reference to mosquitoes.
- (21) To the University of Western Ontario for a study of factors in the attractiveness of objects to adult *Aedes aegypti*.
- (22) To the University of Manitoba for research on the behaviour of biting flies with special reference to orientation and feeding.
- (23) To McMaster University for chemo-reception studies on bloodsucking flies, particularly *Tabanidae*.
- (24) To the University of Manitoba for studies on the effect of developmental temperatures in determining the southern limit of northern mosquito species.
- (25) To Queen's University for research to separate and identify the active principle of mosquito saliva.
- (26) To Queen's University for research on movements of P32 tagged adult black flies.
- (27) To the University of Saskatchewan for studies concerning western equine encephalitis virus in Saskatchewan.

Contracts

- (1) With McGill University for research on ice physics, with special reference to the study of sea ice.
- (2) With McGill University for meteorological and geophysical work at Lake Hazen and Tanquary Fiord.
- (3) With the Arctic Institute of North America to provide limited consultant work.
- (4) With McGill University for a study of terrain evaluation and classification for mobility.
- (5) With the University of Saskatchewan for research on radar aurora at UHF and its correlation with geophysical phenomena. This contract is in support of the experimental program of the Prince Albert Radar Laboratory.
- (6) With the University of Saskatchewan for studies in radiation effects and their relationship to composition, heating, and circulation in the stratosphere and mesosphere.
- (7) With Queen's University for research on the susceptibility of black flies to DDT, including field residues.

Plans for 1969

It is expected that the Board's program will be continued on approximately the same scale as in 1968.

NATIONAL FILM BOARD

NATIONAL FILM BOARD

Responsibilities: The production of motion pictures, film loops, filmstrips, slide sets, and still photo stories about the Canadian North, its people and their activities, as well as its industries and resources; the distribution of this material in Canada and Abroad and the distribution to northern posts and settlements of films interpreting Canada and films in the national interest; service to federal government agencies of advice in the use of audio-visual media and in the planning and production or procurement of film for informational, instructional, training and promotional purposes.

Long-term plans:

Normal planning to meet responsibilities.

Review of 1968 Operations:

1. Film Production:

Tuktu Series — a series of thirteen short films for children preserving aspects of the traditional Eskimo life which has almost gone.

North — a tourist promotion film for Canadian and international theatrical distribution to be followed by television use and circulation through the Canadian Travel Film Libraries and Canadian posts abroad, as well as by the N.F.B. in Canada. Commissioned by the Department of Indian Affairs and Northern Development.

Lifeline — film for Canadian viewers about the operation of Northern Health Services. Commissioned by the Department of National Health and Welfare.

Some material on the North was especially shot for the audio-visual presentations being prepared for the Canadian Pavilion at Osaka '70.

2. Still Photography and Photo Stories:

Several photographers were commissioned to do photographic coverage in the North for the N.F.B. Photo Library;

John Reeves — Rankin Inlet, Chesterfield Inlet, Baker Lake, Eskimo Point, Igloolik, Spence Bay

Paul Baich — Igloolik region

Robert Smith — Northwest Territories, especially Snare Power Dam at Great Slave Lake

Norman Hallendy of the Board's staff photographed the creative and artistic work of Eskimos in the region of Cape Dorset.

Four photo-stories on northern subjects were produced and sent to the press in Canada and abroad;

No.476 Arctic Mineral Explorations
No.478 Canoe Trip, N.W.T.
No.481 Churchill Falls Project
No.487 Hudson Bay — a regional study

3. Film Distribution:

The N.F.B. offices in Vancouver, Edmonton and Winnipeg arrange distribution in the Yukon, Mackenzie District and Hudson Bay areas respectively, and an Outpost Library containing some 1,000 films (700 titles) is maintained in Montreal as a central source of films for the north.

Typical of the organizational and consultative service is that provided to the Mackenzie District by the N.F.B. officer in Edmonton. He makes an annual trip as far north as Yellowknife and Ft. Smith, and every third year he goes as far as Aklavik. He advises community leaders, officials and teachers on screen education and the establishment and operation of instructional materials centres. Most of the film distribution is done from the library of the District Superintendent of Schools in Ft. Smith. That film collection comprises prints purchased by the Department of Indian Affairs and Northern Development and prints supplied by N.F.B. in earlier years. About 30 communities borrow from that library and some 3,700 bookings are made annually. The N.F.B. library at Edmonton also books films to those groups in the north which cannot easily use the Ft. Smith library. Blocks of special films are sent to the correctional institute at Yellowknife, to the D.O.T. at Cambridge Bay, to Frontier College, church and community groups.

From Winnipeg films are circulated to D.E.W. Line stations. Teachers request educational subject, medical staff obtain specialized films, and general interest subjects, including abstract McLaren films, are screened by the native and white populations.

The films in the Outpost Library are sent in blocks of 20 to 25 prints each at intervals of about two months mainly via D.O.T. facilities, to various points in the Eastern and Central Arctic. They are also borrowed directly by staff members of the Department of Indian Affairs and Northern Development for use in some Indian and Eskimo communities. In general the films seem to be very much appreciated, and to do a good job. Each copy is screened an average of ten times per year — a reasonably good use quotient for a southern community. More films are needed, particularly the latest titles, and the service does not reach all northern communities.

Plans for 1969:

1. Film Production:

Man in Cold Climes — a feature length film about man's advance into the Arctic all around the globe. Completion 1970 or 1971. Sponsored jointly by N.F.B. and the Department of Indian Affairs and Northern Development.

Northern Development — a theatrical short for international and Canadian distribution, to reveal in a vivid and impressionistic way the resource and industrial development that is taking place in the Canadian North. Commissioned by the Department of Indian Affairs and Northern Development. Completion 1969.

Wolf Film – film uses the wolf as a vehicle to interpret the values of wildlife to the Canadian economy and society past, present and future. Commissioned by the department of Indian Affairs and Northern Development and filmed mainly in the North. Completion 1970.

Canadian Wildlife Service – responsibilities and activities of the Service. To be filmed largely in the North. Commissioned by the Department of Indian Affairs and Northern Development. Completion 1970.

A **training film** is being completed for the R.C.M.P., for the orientation of officers going to serve in the Arctic.

Two films being made for the Department of Energy, Mines and Resources will contain many references to northern Canada;

The Sea – a basic film on oceanography

Energy – a film about Canada's energy resources.

Three instructional filmstrips about co-operatives, and one on fish plant sanitation designed for use with native peoples, will be completed in 1969. Commissioned by the Department of Indian Affairs and Northern Development.

2. Still Photography and Photo Stories:

Still photo coverage will be commissioned, as the need arises.

As in 1968, a number of photo-stories on the north will be produced and released to the press.

A small photographic exhibition consisting of 20 prints from the Centennial show "Photography in Canada – 1967" was shipped to Cape Dorset at the beginning of 1969. It will tour some 11 Arctic settlements during the year.

It is thought to be the first exhibition to tour the Arctic and provides both a cultural experience and a window onto the rest of Canada. The idea came from the secretary of the West Baffin Eskimo Co-Operative.

3. Film Distribution:

The N.F.B. Northern Service will operate as it did in 1968 with the addition of some new film titles. It will be extended to additional communities as they obtain projectors and power and as transportation is available.

ELDORADO NUCLEAR LIMITED

ELDORADO NUCLEAR LIMITED

Responsibilities: To operate a uranium mine in the Beaverlodge area of northern Saskatchewan, and to engage in such exploration activity as the Company may see fit.

Long Term Plans

To continue the above.

1968 Operations

Operations were normal with production approximately the same as 1967. Additional housing was established for employees living in Uranium City.

Plans for 1969

Plans call for a modest decrease in activity, with a reduction of some 250 employees. Mine output in terms of pounds of uranium, however, will be reduced by approximately 3.7%.

**DEPARTMENT OF NATIONAL
HEALTH & WELFARE**

ANNUAL REPORT FOR NORTHERN REGION

The responsibility of the Federal Government for health activities on behalf of the inhabitants of the north whether Indian or other has been based on its taking on the role of a provincial health department in addition to its federal health responsibilities. To implement its programs the Department of National Health and Welfare employs physicians, nurses and auxiliary health workers to stimulate personal and community health efforts. The problems confronting any agency assuming this responsibility include isolation, distance, severe cold, absence of sunlight for part of the year, poor housing with overcrowding and insufficient heat, primitive sanitary facilities, malnutrition, and inadequately treated water supplies along with all the problems these engender, including the increased prevalence of disease, accidents and acquisition of personal habits which down-grade health. In addition, federal government employment practices which continue to classify northern employees in the same basic grades as southern employees are regarded among the professional classes as failure to officially recognize the more rigorous professional demands imposed by isolation from specialist assistance. Such failure discourages most Canadian professional personnel from offering to serve in the north for significant periods although many may volunteer for short tours.

With the introduction of Medical Care Insurance, Medical Services will continue to look after the health needs of residents in areas unable to attract private medical practitioners or to develop their own local health facilities. Non-government medical practitioners are located only at Yellowknife, Hay River and Fort Smith in the N.W.T. and at Whitehorse, Watson Lake, Mayo and Clinton Creek in the Yukon. Government physicians based at Whitehorse, Inuvik, Cambridge Bay, Frobisher Bay, Churchill and Edmonton cover all other settlements with periodic assistance from touring physicians.

The Regional Director, Northern Region, acts as the Chief Medical Officer of the Northwest Territories while the Zone Director of the Yukon is the Chief Medical Officer of the Yukon. These provide advice and guidance to the respective Commissioners on health matters.

Review of 1968-69

- A. The foundation of the Hay River Hospital which was subsidizing in Permafrost was replaced following an out-of-court settlement of the hospital's claim for damages.

The nursing station at Arctic Bay was augmented by the addition of a trailer unit to improve accommodation for the resident nurses. Health Stations were provided at Holman Island and Teslin. Improvement were begun on hospital quarters in E building at the Whitehorse General Hospital, to provide self-contained suites for nursing and other single staff. The total estimated cost of the project is \$45,000 phased over a two-year period.

Planning for nursing stations at Rankin Inlet and Gjoa Haven was in final stages as the year's end and construction was about to begin.

A trailer was placed at Fort Resolution to augment the health centre thus converting it into a nursing station which replaces the former hospital.

Health Stations at Clyde River, Resolute Bay and Broughton Island were about to be converted into nursing stations.

A residence for nurses was completed at Watson Lake.

B. Personnel and Health Programs

Full-time nurses were located at Clyde River and Resolute Bay. Additional doctors were posted to Frobisher Bay and Inuvik and on temporary basis to Churchill. These made possible the more adequate visiting of outposts.

The Universities of Manitoba, Alberta and McGill carried out medical research and professional training programs in conjunction with local care and treatment. A hearing study in infants and school children was carried out at Frobisher Bay by a team from McGill. Specialist programs in Ophthalmology and Otolaryngology were carried out in the major northern centres. A pilot school dental project was continued in the Yukon Territory, and it is proposed to extend this in the Yukon and Northwest Territories.

Improved air services and landing strips in the Eastern Arctic have resulted in more frequent visits by health department personnel. With the migration of coast dwellers to fixed settlements it was decided to decrease numbers of health personnel on the "C.D. Howe" patrol in the summer of 1969. As a result of this, the Department of Transport decided to cancel the patrol and to use the vessel for other purposes. The last sailing of the "C.D. Howe" as a medical patrol vessel was in the summer of 1968.

A six weeks' training course for lay dispensers was held at Inuvik General Hospital in February to March, 1969. The trainees were Indians from isolated communities who were taught to record their observations in relation to injuries or illness and to transmit their observations by radio; to assess the need for patient evacuation to a medical centre; to administer treatment for common disorders, and on advice received by radio. Five of the seven participants were able to qualify on examination at the end of the course.

C. Health Problems

Possibly because influenza vaccine (Hong Kong Strain) was made available in significant quantities to protect the very young and the very old no significant epidemics developed during the year. Venereal disease and tuberculosis continue to demand attention. Sources of infection are continuously sought and brought under treatment. Tuberculosis is being diagnosed much earlier than heretofore. As a result of this it is possible to treat with safety many early cases in their home environment rather than in hospital. There were several cases of meningitis in Keewatin and rare cases elsewhere.

Polar Expeditions

The participants of the British North Pole Expedition and of the Munro Para-Polar Expedition were medically screened before they set out on their scientific explorations to the Pole.

A. Health Facilities

A nursing station will be built at Faro the site of a mining development near Ross River. It is planned that Medical Services personnel will be responsible for its operation. Provision of a prebuilt type of four bed nursing station on the south coast of King William Island at Gjoa Haven, and of a new permanent nursing station at Rankin Inlet to replace the portable facility, is in progress. A portable health station for Beaver Creek, Y.T., will serve a community of approximately 600 people at Mile 1202 on the Alaska Highway. The Yellowknife Hospital Society is planning to enlarge the Municipal Hospital (Stanton Yellowknife) by about 30 beds to make a total of 70. While the present capacity is able to cope adequately with an ideal 73 average occupancy, development of the Capital will ultimately make additional beds necessary.

Ward 400 of Inuvik General Hospital, N.W.T., is being renovated to provide single accommodation with bathroom facilities. This will permit the application of appropriate isolation techniques for tuberculosis patients.

A permanent four bed nursing station is planned for the south coast of Cornwallis Island at Resolute Bay.

Efforts are being made to improve communications between nursing stations and base hospital.

B. Personnel and Health Programs

Because of the high turnover is nursing staff, extra nurses will be deployed in strategic areas as reserves for relief assignments on short notice. It is hoped that this will ensure the continuous operation of all nursing stations. A study of mental health services to both territories and a study of hospital requirements in the MacKenzie area of the Northwest Territories were completed during the early months of 1969.

Arrangements are continuing whereby members of the staff of the University of British Columbia are conducting studies into tuberculosis and non-tuberculous chest illnesses, in association with eminent chest consultants employed directly by the department. An agreement with the University of Alberta provides for medical students under supervision to carry out audio-metric surveys and tonometry as well as visual screening in inhabitants of the north. An agreement has been concluded with McGill University for comprehensive medical coverage of Baffin Zone from bases in the Frobisher Bay General Hospital and in Montreal. Close to fruition are agreements with the University of Alberta for medical coverage at Inuvik and with the University of Manitoba for physicians' services at Churchill and in Keewatin.

Six Medical Officers and one para-medical Officer have been recruited for summer duty on D.O.T. ships.

In the early months of 1969 the north was fully staffed except for a vacancy for a staff surgeon at Inuvik.

Communications

Meetings were commenced with representatives of the Department of Indian Affairs and Northern Development and of the Post Office Department in an effort to improve use of air transportation on a co-operative basis both as to economies of operation and service to isolated communities.

In addition, meetings with representatives of the Department of Communications and the Communications Office of Trans Canada Telephone System are underway to stimulate improvement of radio telephone communications in the middle and far north and in other isolated areas. This has high priority because improved medical communications are essential to the provision of adequate medical care.

1970-71

A. Health Facilities

Under discussion are plans for the completion of a building to be used as a nursing station at Clyde River, and of new nursing stations at Arctic Bay and Broughton Island. Since it is improbable that a resident physician will become available for Dawson City the Yukon Territorial Government has decided that a nursing station would be adequate and more readily financed than a hospital. The trealer at Rankin Inlet is to be moved to Whale Cove in the early summer of 1970. There is to be a new four bed nursing station at Fort Resolution, N.W.T., the total estimated cost of which is \$275,000. In areas where adequate foundations can be constructed, buildings of non-combustible materials must be considered even where their cost will be higher.

Health stations are being contemplated for Coleville Lake, Arctic Red River, Paulatuk and Carcross. It is planned to place a trailer unit as a Health Station at Snowdrift, N.W.T., at a total cost of \$33,000.

B. Personnel

Continuing arrangements with universities are anticipated to allow their medical staff and residents to participate in health and research programs in the north.

NATIONAL MUSEUM OF CANADA

NATIONAL MUSEUM OF CANADA

NATIONAL MUSEUM OF MAN

Responsibilities: Investigations relating to the archaeology, physical and social anthropology, ethnology and history of the North and the collection, preservation and display of specimens required for research and public information.

Long-term Plans:

Normal planning to meet responsibilities.

Review of 1968 Operations

Archaeology Division

Excavations and archaeological survey were conducted by a staff member and assistant in the District of MacKenzie, N.W.T., for 2½ months; another staff member undertook brief reconnaissance for archaeological sites in the Dawson and Old Crow areas of the Yukon. Extensive excavations of sites at Roes Welcome Sound, N.W.T., in the Old Crow area of the Yukon, near Aishihik Lake, southwest Yukon Territory, and the Great Bear-Great Slave Region of the N.W.T., were performed separately by 4 contract archaeologists working with 4-10 assistants, during the summer months.

Ethnology Division

Ethnological study of Eskimo groups in the Northwest Territories was pursued by one staff member for 5 months and by another for 2. A one-year study of Indian culture in northern Manitoba was completed in 1968 by a staff ethnologist and another undertook brief investigations in the James Bay region. Under contract, 4 ethnologists conducted field research in the Arctic and Territories and 6 carried on investigations in the northern parts of the provinces. Five additional contractees utilized institutional resources for studies of groups in these areas. The average period of research was 2½ months.

History Division

Historical research relating to the Arctic and Subarctic regions of North America was conducted under contract by a member of the Scott Polar Research Institute for approximately five months.

Plans for 1969:

Archaeology Division

Archaeological site surveys in the MacKenzie River Basin will be undertaken by a staff member and assistant during the summer months; another will continue field work on the arctic coast near the MacKenzie Delta. A two-week field trip to the northern Yukon Territory is planned by another archaeologist. Extensive excavation in the area of Rankin Inlet, N.W.T., will be conducted by a contract archaeologist and 4 assistants for two months. Two contractees will make archaeological site

surveys around Ft. Norman, District of MacKenzie, and on the shores of the Great Bear Lake for two months.

Ethnology Division

Ethnological field research will be undertaken for four months in the Subarctic and three months in Northern Manitoba by individual staff members. Another staff member will pursue research in Athabaskan linguistics for six or more months. Contract research in ethnology relating to the North is expected to be similar to that of 1968.

History Division

An additional period of three months in 1969 will be required to complete the contract on research into the history of the North mentioned in the *Review of 1968 Operations*.

NATIONAL MUSEUM OF CANADA.

NATIONAL MUSEUM OF NATURAL SCIENCES

Review of 1968

Operations:

The collaboration of The National Museum of Natural Sciences and the Polar Continental Shelf Project made possible the beginning of a series of zoological studies at Bathurst Island, N.W.T. These studies have two main purposes:

First, Bathurst Island is important in the study of bird distribution and taxonomy because no detailed study had previously been made there, and the influence of Old World races is not known.

Secondly, studies in zoogeography and an inventory of the life forms is insufficient. Environmental studies which emphasize animal behaviour and life history studies will demonstrate the interactions between species during their annual cycles, and show how their reproductive success is affected by minor climate changes. No such detailed studies on vertebrate populations have been undertaken in the high arctic. In my opinion these must be undertaken before the habitats are disturbed, so that the extent of any disturbance can be evaluated. Since Bathurst Island is within the area designated for oil prospecting, these studies are now urgent.

In 1968 my field operations included the following research projects:

- (1) – a study of the courtship, territorial and breeding behaviours of Rock Ptarmigan.
- (2) – a study of behaviour, and the annual cycle of the Sanderling.
- (3) – a study of the general behaviour and social interactions of muskoxen.
- (4) – a study of locomotion and gaits of large mammals.
- (5) – collection and preparation of bird specimens for taxonomic study.
- (6) – collaboration with the Federation of Ontario Naturalists in the production of a high fidelity recording of arctic bird songs for the "Sounds of Nature Series".

Plans for 1969

Projects number 1, 2, 5, and 6 will be continued. Project number 3 will also be continued, but supported by the Canadian Wildlife Service. Two new projects will be started this season: (a) Behaviour and life history study of the arctic hare; (b) Studies of overwintering insects which is to be conducted and supported by the Department of Agriculture.

NATIONAL MUSEUM OF CANADA
NATIONAL MUSEUM OF NATURAL SCIENCES
BOTANY DIVISION

Responsibilities: The Botany Division of the National Museum of Natural Sciences has an overall interest in botanical exploration and research in Canada's North. The National Herbarium contains important collections of plants made in the Arctic during the past century. From time to time members of its scientific staff (Curators and botanists on contract assignments) carry out field studies in the North. In addition, botanists from other institutions, both in Canada and abroad, regularly deposit original or duplicate sets of specimens in the National Herbarium.

Long-term Plans:

The Botany Division plans to continue a general program of exploration, research and publication on the Botany of Arctic Canada and to co-operate with other institutions and individuals working in the same area.

Review of 1968 Operations

Phycology Section

Dr. R.K.S. Lee, Curator of Algae, carried out ecological observations and dredging of benthic marine algae from July 30 to August 26, 1968, at various points along the shores of five islands in the western Canadian Arctic Archipelago: Prince Patrick Is., Banks Is., Eglinton Is., Melville Is. and Brock Is. Specimens were collected and recorded under 156 collection numbers.

Bryology Section

Dr. M.P. Kuc, an N.R.C. Postdoctoral Fellow, spent the period from May 21 to September 12, 1968, making a survey of vegetation in areas little known botanically on islands of the Western Canadian Arctic. He carried out a vegetation mapping program on Fitzwilliam Owen Island, explored peat profiles in the Mould Bay and Masik River areas and made collections of plants also on Banks Is., Eglinton Is., Prince Patrick Is., Melville Is., Cornwallis Is., Meighen Is. and NW Ellesmere Is.

Field assistance and other logistic support for both Dr. Lee and Dr. Kuc was provided by the Polar Continental Shelf Project through the Department of Energy, Mines & Resources. Collections from both projects will be preserved in the National Herbarium.

Plans for 1969

Phycology: Dr. R.K.S. Lee plans to work from the Polar Continental Shelf Project's field base at Tuktoyaktuk, N.W.T., in the summer of 1969. He will attempt a marine algal survey westward along the Yukon shore and eastward towards Amundsen Gulf in addition to an intensive survey of the area immediately around the base itself.

Review of 1968

No ichthyological field work was carried out in the Arctic in 1968 by museum staff.

Plans for 1969

Two field surveys will be carried out by the ichthyological section in 1969. The first is a study of the fishes of the Coronation Gulf and Bathurst Inlet areas of N.W.T. from the end of July to the beginning of September Dr. D.E. McAllister of the Museum, on the Fisheries Research Board vessel *Salvelinus*, will collect and photograph fish specimens. These will be used in systematic studies culminating in a volume *Fishes of the Arctic Coast of Canada* by D.E. McAllister and J.G. Hunter. Fishes will be collected using trawls, gill nets and seines.

The second project is a survey of the fishes of the Churchill Falls area Labrador. This area will be flooded by a huge hydroelectric project. The area is unknown ichthyologically and it is necessary to secure specimens, ecological and distributional data before the impoundment modifies the environment. The opportunity will be taken to collect in neighbouring areas. The field leader of the survey, T.A. Willock, will have one assistant. Access to collecting areas will be gained by truck, inflatable boat and aircraft. Gill nets, seines and dip nets will be used to collect specimens. The expedition will leave Ottawa June 9 and return August 9.

NATIONAL MUSEUM OF NATURAL SCIENCES

CURATOR OF MAMMALS

Long Term Plans:

Most foreseeable research in mammalogy will be conducted in Arctic and subarctic regions with primary emphasis on collecting in Alaska, Yukon, Northwest Territories and hopefully Siberia.

Review of 1968

Operations: Mr. David Gill & Mr. Robert Wrigley collected mammals in the Northwest Territories (vicinities of: Norman Wells; Carcajou Lake; Inuvik; Reindeer Station; Tuktoyaktuk) and the Yukon (Summit Lake; Whitehorse; Yukon Crossing), for taxonomic purposes. About 300 mammals were collected as well as ectoparasites, and serum.

Plans for 1969:

A continuation of the previous summer's work with emphasis on serological and cytotaxonomic techniques, in the coastal Yukon — western Mackenzie District, N.W.T. (associated with Polar Continental Shelf Project).

NATIONAL RESEARCH COUNCIL

NATIONAL RESEARCH COUNCIL

Responsibilities: Investigations into various phases of pure and applied sciences in northern Canada.

Long-term Plans

Four Divisions of the National Research Council have a continuing interest in the North.

The Division of Pure Physics is involved in two major programs in northern Canada; ground based cosmic ray observations and rocket studies of charged particles associated with auroral events.

The Division of Building Research conducts studies of permafrost and northern building problems.

The Radio and Electrical Engineering Division carries out radio and optical measurements of upper atmospheric phenomena, for example, auroral and air glow observations.

The Space Research Facilities Branch operates the Churchill Research Range, the Great Whale Geophysical Station, and a launching facility at Resolute Bay, and coordinates scientific programs undertaken at these facilities.

Other Divisions of the National Research Council become involved periodically with northern work on a short-term basis.

Review of 1968 Operations

Division of Pure Physics

Continuous cosmic ray observations were carried out at five stations in northern Canada (Resolute, Churchill, Alert, Inuvik, and Goose Bay). The purpose of this work is to study cosmic ray intensity variations and it is part of an international program carried out in collaboration with Atomic Energy of Canada Ltd., Chalk River, and the Southwest Center for Advanced Studies, Dallas, Texas.

In 1968 experiments were flown on 11 rockets from Fort Churchill. These experiments measured energy spectra and angular distributions of electrons, protons, and α -particles associated with various geomagnetic disturbances. New results were obtained on the nature of particle acceleration mechanisms and the composition of energetic particles at low altitudes.

Division of Building Research

Operation of a small field station with a permanent technical staff of two was continued at Thompson, Manitoba to provide support for various engineering and terrain studies of permafrost being carried out in northern Manitoba. Load-deformation tests of anchors installed in permafrost at Gillam, Manitoba were completed. Long-term testing of similar anchors in permafrost at special sites at Thompson were expanded during the year.

An inspection and sampling program of treated and untreated timber piles at Inuvik was carried out in August with the co-operation of the Forest Products Laboratory. Observations were continued throughout the year and field surveys conducted during August and October at Inuvik to assess the foundation performance of various structures including buildings, oil tanks, powerhouse, wharf and airstrip constructed on permafrost. Studies of terrain disturbance were also continued.

Ground temperature measurements to determine the distribution of permafrost at a small lake near Inuvik were terminated. Field observations of sand dykes on thawing permafrost at Kelsey in northern Manitoba were continued. Surveys were made and some instrumentation was fabricated for a similar study to be undertaken at the Kettle Generating Station on the Nelson River in co-operation with Manitoba Hydro.

A helicopter survey was made to delineate the southern boundary of permafrost in northern Newfoundland and Labrador. This completes the program, begun in 1962, to define the southern extent of permafrost in Canada.

Radio and Electrical Engineering Division

During 1968, DA-3 auroral all-sky cameras were in operation at Poste-de-la-Baleine (Great Whale River), Quebec, Moosonee, Ontario, and Churchill, Manitoba. The Great Whale cameras were used on a conjugate-point program with identical cameras being exposed at Byrd Station in the Antarctic. Auroral photometers, utilizing interference filters, were also used at Great Whale and Byrd. An automatic auroral photometer was operated for two months in the fall at a site 65 miles north-east of Poste-de-la-Baleine.

Infrared airglow photometers were flown on two balloon flights from Churchill. Auroral radar equipment was operated at Poste-de-la-Baleine, and at Churchill and Thompson, Manitoba. During 1968 plasma probes were placed on 17 rockets fired at Churchill and 2 fired at Resolute. Micrometeoroid detectors were placed on five rockets fired at Churchill.

During the middle of December 1968, a rocket devoted primarily to micrometeoroid research was fired. Some experiments from American, German, and Swedish scientists were included.

Space Research Facilities Branch

The Council, through its Space Research Facilities Branch continues to operate the Churchill Research Range in conjunction with the National Aeronautics and Space Administration of the United States. Programs include the launching of sounding rockets and balloons to investigate geophysical phenomena in the upper atmosphere on behalf of scientists from Canada, the United States, and other countries. Associated ground based experiments are also carried out by the Technical Support Section of the range.

Two sounding rockets were launched from Resolute in October by the Space Research Facilities Branch with experiments for the University of Calgary, the Radio and Electrical Engineering Division of the National Research Council, and the Defence Research Telecommunications Establishment. Assistance was given to the

National Aeronautics and Space Administration of the United States, who launched two rockets during August.

The Space Research Facilities Branch is also responsible for the coordination of various cooperative scientific programs at the Great Whale Geophysical Station. These facilities have been used in connection with balloon launches from the Churchill Research Range.

International Biological Program (IBP)

Two projects are being carried out in northern Canada under the IBP. Although no NRC personnel are directly involved the work is largely financed by the National Research Council through the Canadian Committee for the IBP (CCIBP). Dr. N.E. Gibbons and Dr. P.R. Gorham of NRC are vice-chairman and secretary, respectively, of the CCIBP.

Universities participating in the Igloodik Project (Dr. D.R. Hughes, University of Toronto – project leader) are Toronto, McGill, Manitoba, Alberta, Laval and Chicago. Those participating in the Char Lake (Resolute Bay) Project (Dr. F. Rigler, University of Toronto – project leader) are the Universities of Toronto, McGill and Waterloo. The Department of Indian Affairs and Northern Development and the Department of Energy, Mines and Resources have provided assistance, mainly accommodation, at Igloodik and Char Lake respectively.

Plans for 1969

Division of Pure Physics

Both the studies of cosmic ray intensity variations at the five northern stations and the rocket program at Fort Churchill will be continued.

Division of Building Research

Preliminary surveys of permafrost occurrence will be conducted in the Yellowknife area and mountainous regions of B.C. Terrain studies of permafrost at Thompson will be greatly expanded during the year. Field studies of permafrost and the performance of engineering structures and facilities founded on perennially frozen ground will be continued at Inuvik, N.W.T., Thompson, Kelsey and Gillam, Manitoba. Operation of the Thompson Field Station as a support facility for field projects in northern Manitoba will be maintained.

Radio and Electrical Engineering Division

Instrumental equipment for the observation of aurora will continue in use at Poste-de-la-Baleine, Churchill, Thompson, and Moosonee. A second-generation automatic auroral photometer will be tested at Poste-de-la-Baleine. Use of upper-air rockets will continue much as in 1968.

Space Research Facilities Branch

Operation of the Churchill Research Range will be continued for the launching of sounding rockets and balloons to investigate geophysical phenomena in the earth's

atmosphere and in space on behalf of scientists from Canada, the United States and other countries.

Four sounding rockets will be launched from Resolute in October 1969, by the Space Research Facilities Branch. Two will be a continuation of the x-ray experiment conducted by the University of Calgary over the past three years and the remaining two will be a new series conducted by the University of Calgary and NRC. Up to six rockets will be launched in 1969 by Goddard Space Flight Centre, NASA, in a continuation of their experimental studies.

The Great Whale Geophysical Station will continue its work of auroral photography and photometry, and making a variety of radio frequency measurements for Canadian and U.S. agencies. Most of these measurements are correlated with measurements made at Byrd Station in Antarctica, which is at the geomagnetic conjugate point of Great Whale. Facilities at Great Whale will be used as required to supplement those at Churchill Research Range in connection with rocket and balloon borne experiments.

National Aeronautical Establishment

The following thermal infrared surveys for various purposes are planned in 1969:

(a) A survey of ice in the vicinity of Ward Hunt Island, (off the north shore of Ellesmere Island) on behalf of the Defence Research Board.

(b) A survey of permafrost areas in the Mackenzie River delta and Thompson, Manitoba in cooperation with the Geological Survey of Canada, and the Division of Building Research, NRC.

(c) A survey of sulphur deposits in north-eastern Alberta and

(d) A survey of areas of recent volcanic activity in northern B.C., in cooperation with the Geological Survey of Canada.

International Biological Program (IBP)

Field work will be conducted at both the Igloodik and Char Lake projects during the period April to October. Project personnel will vary at both sites from 2 to 4 at the beginning and end of the period to from 12-17 during June, July and August.

**DEPARTMENT OF NATIONAL
REVENUE**

DEPARTMENT OF NATIONAL REVENUE

CUSTOMS AND EXCISE

Responsibilities: To administer the Customs and Excise laws and regulations, particularly the Customs control of movement of aircraft and vessels.

Long-term Plans

To increase Customs service in pace with the development of the north.

Review of 1968 Operations

The local ports of Whitehorse and Dawson, Y.T., with their respective outports and other offices continued operations under the District Port of Vancouver, B.C. Outports of Whitehorse were Carcross, Pleasant Camp and Beaver Creek; and under Dawson, the outport of Old Crow.

Edmonton's sub-office at Yellowknife, N.W.T. provided seasonal clearance service for commercial aircraft, conditional upon 72 hours advance notice of arrival being provided to the main port. Also under Edmonton, enforcement service was provided on a part time basis at Inuvik by an eskimo resident of the area, employed by Customs for this purpose.

The R.C.M.P. continued to provide service on behalf of Customs at Frobisher Bay, N.W.T. under the jurisdiction of the Port of Goose Bay, Nfld.

At sixteen other points officials of other government departments acted as Customs Officers for the purpose of clearing ships and aircraft. These were as follows:

Royal Canadian Mounted Police

Baker Lake	Pangnirtung
Cambridge Bay	Pond Inlet
Coppermine	Resolute Bay
Eskimo Point	Sachs Harbour
Lake Harbour	Spence Bay
	Tuktoyaktuk

Department of Transport

Alert	Isachsen
Coral Harbour	Mould Bay
Eureka	

Plans for 1969

Normal planning to meet responsibilities.

DEPARTMENT OF NATIONAL REVENUE

TAXATION DIVISION

Responsibilities: Our one small district office, with a staff requirement of nine, situated at Whitehorse, is responsible for the administration and enforcement of the Income Tax Act, Estate Tax, Old Age Security Tax and Part I of the Canada Pension Plan Act of the Government of Canada and for the collection of individual and corporation income tax for the Yukon Territory. Some of the functions require assistance from our Edmonton District Office.

Long-term Plans

No change from present plans is contemplated at the moment.

Operations 1968

Activities for the past calendar year were those regularly performed by the district office and on a scale comparative to prior years and include some field assessing and collection work by four people.

Plans for 1969

Again, activities for the 1969 calendar year will be somewhat identical to those of 1968.

**NORTHERN CANADA
POWER COMMISSION**

NORTHERN CANADA POWER COMMISSION

Responsibilities: To provide Public Utilities in the Yukon and Northwest Territories as authorized by the Governor-in-Council. To operate each plant from consumer revenue on a self-sustaining basis including repayment of capital expenditures.

Long-term Plans

Forecast and normal planning in order to establish, maintain, and expand electrical and utility requirements.

Review of 1968 Activities

The following work was completed:

(a) Snare/Yellowknife, N.W.T.

A 28-mile 115 KV transmission line connecting the settlements of Rae and Frank Channel, N.W.T. to the Snare River Hydro system was completed in 1968.

(b) Fort Smith, N.W.T.

Due to the landslide at Fort Smith, the standby diesel plant was abandoned; all equipment was salvaged from the power house but a warehouse and supplies stored therein were lost in the slide. A diesel standby service of 960 KW was established by installing one of the units salvaged from the diesel plant in the control centre vehicle garage.

(c) Fort Simpson, N.W.T.

A 250 KW diesel unit was installed (replacing one 75 KW unit) to provide increased standby reserve.

(d) Whitehorse, Y.T.

Two diesel generating units, total capacity of 9100 KW were installed in a new power plant building adjacent to the Commission's Whitehorse Rapids Hydro Plant to provide peaking and standby capacity. Installation of a third hydro-electric unit (capacity 8000 KW) in the Whitehorse Rapids Hydro Plant and construction of a 225-mile transmission line to serve the Anvil-Vangorda mining area is in progress and scheduled for completion in the summer of 1969.

(e) Inuvik N.W.T.

A 3,000 foot extension of the utilidor system was completed to serve new federal housing and a new school. A water line was constructed to serve a portion of the heretofore unserved housing area.

(f) Frobisher Bay, N.W.T.

Steam and water services were extended to supply the laundry and dry cleaning establishment.

(g) Fort Resolution, N.W.T.

A 200 KW diesel unit was installed during the year (replacing a 75 KW unit) to provide adequate standby reserve.

(h) Aklavik, N.W.T.

A 250 KW diesel unit was installed to meet the increasing power demand of the Aklavik area and to provide adequate reserve capacity.

(i) Taltson River, N.W.T.

A rock-fill storage dam was constructed on the upper Taltson River at the outlet of Nonacho Lake to ensure adequate water storage over winter months to supply increased demands on the Twin Georges hydro plant, resulting from the provision of increased milling capacity by Pine Point Mines Ltd.

(j) Cambridge Bay, N.W.T.

A 350 KW diesel unit was installed increasing the plant capacity to 1200 KW.

(k) Norman Wells, N.W.T.

Two 350 KW gas turbine generating units were installed in a new power plant constructed at Norman Wells, and responsibility for power supply to the community was transferred from the Imperial Oil Co. to the Commission. This plant is being fueled with untreated naphtha which is a surplus product at Norman Wells, and thereby releases a quantity of diesel oil for normal market supply.

(l) Baker Lake, N.W.T.

The Commission assumed responsibility for generation and distribution of power at Baker Lake in August 1968. Plans are in hand to increase the capacity of the plant from 750KW to 1450 KW in 1969.

(m) Chesterfield Inlet, N.W.T.

The Commission assumed responsibility for generation and distribution of power at Chesterfield Inlet, September 1968. Three diesel generating sets totalling 400 KW were installed in an existing powerhouse building.

Review of 1968 Operations

Northwest Territories

PLANT	UTILITIES	CAPACITY	KWH OUTPUT	STAFF	CONSUMERS	APPROX. GROSS REVENUE
Taltson (Hydro)	Power	25,000 HP	83,571,342	17	2 (wholesale)	\$ 752,936
Fort Smith Distribution System						
Pine Point Distribution System						
Inuvik (Diesel)	Power	3,860 KW	12,124,000	46	742	271,552
	Heat				80	195,307
	Water & Sewerage				100	
	Mtce. Services					1,191,215
Fort McPherson (Diesel) (Operated for IAND)	Power, Heat	750 KW	1,157,537	17	120	
	Water, Sewerage					
	Mtce. Services					228,776
Fort Simpson (Diesel)	Power, Heat	1,225	2,480,415	26	222	
	Water, Sewerage					
	Mtce. Services					469,550
Aklavik (Diesel) (Operated for IAND)	Power	763	746,125	6	154	94,870
Frobisher Bay (Diesel & Gas Turbine)	Power	4,300 KW	9,397,680	35	508	
	Heat					
	Water & Sewerage					972,046
Fort Resolution (Diesel)	Power	450 KW	762,682	3	103	77,324

<u>PLANT</u>	<u>UTILITIES</u>	<u>CAPACITY</u>	<u>KWH OUTPUT</u>	<u>STAFF</u>	<u>CONSUMERS</u>	<u>APPROX. GROSS REVENUE</u>
Chesterfield Inlet (Diesel) (from Sep 68)	Power	400 KW		3	48	13,485 (Part Year)
Snare River (Hydro) (Snare Rapids) (Snare Falls)	Power	17,550 HP	87,513,097	14	3 (wholesale)	617,300
Fort Rae Distribution System (from Jul 68)	Power				97	21,446 (Part Year)
Cambridge Bay (Diesel)	Power	850 KW	1,502,100	5	29	166,165
Coppermine (Diesel)	Power	600 KW	444,630	4	73	112,580
Baker Lake (Diesel) (from Aug 68)	Power	680 KW	610,400	3	57	84,386 (Part Year)
Yukon Territory						
Mayo (Hydro)	Power	6,000 HP	33,297,305	11	2 (wholesale) 177	377,132
Whitehorse (Hydro)	Power	1,500 HP	63,958,010	14	8 (wholesale)	711,454
Dawson (Diesel)	Power Water & Sewerage	750 KW	1,896,854	10	351 255	222,130

Plans for 1969

(a) General:

Routine maintenance of Transmission and Distribution Systems including minor distribution systems extensions to serve new consumers.

(b) Yellowknife, N.W.T.

Installation of a 5000 KW diesel unit to provide standby and peaking capacity for the Yellowknife area.

(c) Fort Smith, N.W.T.

Reconstruction of diesel standby facilities.

(d) Fort Simpson, N.W.T.

Addition of 300 KW diesel unit for plant reserve.

(e) Whitehorse, Y.T.

Completion of expansion program comprising installation of 8,000 KW hydro unit in the Whitehorse Rapids Plant and commissioning of 225-mile transmission line to serve the Anvil-Vangorda Creek area. Planning of additional generating capacity to meet indicated load growth of the Whitehorse and Central Yukon area.

(f) Fort Good Hope, N.W.T.

Construction of diesel generating plant to serve the community.

(g) Inuvik, N.W.T.

Planning and preliminary work to increase heating and electrical generating capacity; installation of 35,000 barrel fuel storage tank.

(h) Frobisher Bay, N.W.T.

Installation of 2500 KW diesel generating unit and extension of heat, water services to supply new townsite development and housing facilities.

(i) Fort McPherson, N.W.T.

Installation of 3,000 barrel fuel storage tank.

(j) Dawson, Y.T.

Planning and preliminary work to increase electrical generating capacity to meet indicated load growth.

(k) Cambridge Bay, N.W.T.

Installation of 5,000 barrel oil storage tank.

**NORTHERN TRANSPORTATION
COMPANY LIMITED**

NORTHERN TRANSPORTATION COMPANY LIMITED

Responsibilities: To act as a common carrier of freight within the Mackenzie River Watershed under the jurisdiction of the Canadian Transport Commission.

To distribute freight by sea from Tuktoyaktuk to the DEW Line Stations and other populated areas in the Western Arctic.

Long Term Plans:

Normally planning to meet responsibilities plus forward planning to have sufficient equipment available to meet anticipated expansion of the oil exploration programs.

Review of 1968 Operations

Tonnage handled by the Company within the Mackenzie River Watershed and the Western Arctic for 1968 amounted to 206,970 tons. This was an increase of 24.5% over the 1967 season's total of 166,214 tons. The increase in tonnage was due to the resumption of oil drilling activities along the Mackenzie River and the oil discovery in the Prudhoe Bay area of the North Slope of Alaska. Traffic into the Lake Athabasca area also showed a slight increase.

Operations in the Western Arctic were the best encountered since the Company has been operating in the area – which contrasted sharply with 1967 when the worst conditions were encountered.

Low water conditions were encountered in the latter part of August and continued throughout the balance of the season. This resulted in considerable damage to the equipment and some delays in making deliveries; however, all commitments were completed with the favourable fall weather.

Plans for 1969 Operations

Capital Expenditures of something over twelve million dollars are anticipated; this will cover the construction of three 4000 H.P. tugs, plus twenty-four barges of 1000 ton carrying capacity. The balance of the expenditures will cover additional handling equipment and storage area at Hay River – as well as replacement of equipment at other agencies.

POST OFFICE DEPARTMENT

POST OFFICE DEPARTMENT

Responsibilities: Provision of mail service to and from post offices in the Yukon and Northwest Territories.

Long Term Plans

To provide adequate mail service subject to the availability of transportation services particularly taking advantage of the 1968 revision of air licenses by the ATC to improve the mail service to certain settlements.

Review of Operations for the Fiscal Year 1967-68

The following table lists the scheduled air and surface mail transportation services on which mail was conveyed to and from the Yukon and Northwest Territories showing the expenditures for the fiscal year 1967-68.

Yukon

1. Air Transportation

Dawson — Old Crow	\$	30,003.60
Whitehorse — Ross River		2,768.94
Vancouver — Whitehorse		993,039.21
Whitehorse — Dawson		35,547.30
Dawson — Stewart River		<u>480.00</u>
	\$	1,061,839.05

Surface Transportation

Atlin & Whitehorse	\$	6,000.00
Dawson Creek & Whitehorse		82,105.92
Mayo & Elsa		3,361.96
Whitehorse & Alaska Highway (mile 1202)		10,420.00
Whitehorse & Dawson		15,163.00
Post Office to Airport Services		<u>11,189.62</u>
	\$	128,240.50

Total expenditure for conveyance of mail to and from the Yukon Territory
\$ 1,190,079.55

Northwest Territories

Air Transportation

Edmonton — MacKenzie River Area	\$	618,917.67
Yellowknife — Discovery		1,679.55
Yellowknife — Snowdrift		417.63
Fort Nelson — Fort Liard		1,466.40
Inuvik — Sachs Harbour		2,158.50
Resolute — Area		27,215.93
Montreal — Resolute		348,954.23
Christmas Air Drop (Armed Forces)		6,863.73
Fort Churchill — Baker Lake-Coral Harbour		<u>129,447.60</u>
	\$	1,137,121.24

Surface Transportation

Hay River & Hay River Annex (Vale Island)	\$	1,560.00
Hay River & Rae		4,500.00
Peace River & Hay River		54,858.26
Post Office to Airport Services		27,749.74
	\$	<u>82,668.00</u>

Total expenditure for conveyance of mail to and from the Northwest Territories
\$ 1,219,789.34

As in past years advantage was taken of the opportunity to despatch mail to settlements in the North on a courtesy basis by government and privately owned vessels, flights of the armed forces and R.C.M.P. as well as aircraft chartered by over Government Departments.

2. Revenue

C.A. Div. — During the fiscal year 1967-68 the revenue derived from Post Offices was as follows:

Northwest Territories	\$	173,985.05
Yukon Territory		194,463.13
Total	\$	<u>368,448.18</u>

G.F. Div. — Expenditures for salaries at Post Offices paid from postal revenue during 1967-68 were as follows:

Northwest Territories	\$	118,023.08
Yukon Territory		70,010.88
Total	\$	<u>188,033.96</u>

3. New Post Offices

Opening Date

Port Burwell, N.W.T.	26-1-68
Tungsten, N.W.T.	28-3-68
Holman, N.W.T.	31-8-68
Clinton Creek, Yukon	13-11-68
Broughton Island, N.W.T.	20-12-68

The Post Offices at Hillcrest, Yukon and Reindeer Station, N.W.T., were closed on the 31st July 1968 and 30th June 1968 respectively.

4. Employment Statistics

355 persons were employed full-time, of which 93.4% were recruited locally.

80 persons were employed part-time all of whom were recruited locally.

42.92 casual and .89 seasonal man years were utilized. All casual and seasonal employees were recruited locally.

5. Plans for 1969

To arrange with carriers to improve mail service to certain settlements to which the carriers have been granted licenses by the 1968 revision of air licenses granted by the Air Transport Committee.

**DEPARTMENT OF PUBLIC
WORKS**

DEPARTMENT OF PUBLIC WORKS

Responsibilities:

- a) Provide a construction service for government departments who carry on programs of resource and manpower development in the North. Aspects of this service include, architectural, engineering and construction capability. Such capabilities includes, assistance in planning, site investigation, economic analysis, design, construction and management of buildings, utilities, highways, harbours, wharves and associated structures.
- b) The Department of Public Works carried out, within its own terms of reference, the responsibilities in connection with site investigation, planning, construction and maintenance of buildings, highways, utilities and associated structures. A major responsibility exists for maintenance and development of the navigational capabilities in the North, such as the MacKenzie River System. Management and maintenance of federal government properties include, buildings and housing. Leases are arranged where federal buildings are in short supply.

Long Term Plans

- a) To achieve a higher standard of liaison and service to government departments in the North by –
 - continuation of research and improvement of techniques of construction special to the area.
 - collection and compilation of data on the area development.
 - improvement in management, design and maintenance practices to more efficiently carry out other government department requests.
- b) To carry out a higher standard of administration of the department's program in the areas. The program includes such diverse items as upgrading the Alaska Highway and Haines Road; dredging projects on such locations as the MacKenzie River, Slave River; maintenance of river works; space requirement surveys for accommodation; utilities assessment vis-a-vis modern standards and demand usage.

Review of 1968

The major reorganization within the Department of Public Works, started in 1966, was partially completed in 1967 and became operational in 1968, with the decentralization of implementation of projects to Regional and District Offices. Decisions relating to schedules and contracts were arranged so that advantage can be taken of climatic conditions and shipping facilities with a resultant benefit to contractors. This benefit permits more accurate bidding and a resultant economic benefit of lower relative prices on works.

OPERATIONS (1968)

A. Western Region (Northwest Territories and Fort Churchill)

1. DPW Activities

Various projects at Fort Churchill were carried out at a cost of \$260,000. These projects included painting office and living quarters, repairs and painting water storage tanks, alterations and renovations to the Borealis Dining Room and conversion of the fuel system at the heating plant.

The 1.9 million dollar 50 unit housing project in Inuvik was completed and placed in service.

Warehouse alterations to the value of \$44,000.00 were carried out in Hay River. Repairs and improvements were made to various pool housing units in Hay River, Ft. Smith and Yellowknife.

The installation of the floating wharf at the lower end of the Great Bear River portage road was completed, and all marine structures serving navigation on the Athabasca/Mackenzie River system were serviced and maintained. Major repairs to the wharf at Bushell, Saskatchewan were carried out. Materials were purchased for a temporary wharf which is to be constructed at Ft. McPherson in 1969. A contract was awarded for the supply of units for a floating wharf to be installed at Wrigley.

Dredging was undertaken at various locations on the Athabasca/Mackenzie River system. Control surveys and investigations related to future navigational improvements were also carried out.

Accommodation services maintained a constant liaison with the Government of the Northwest Territories in order to establish policy in respect to continuing management for residential and office accommodation. Through four Zone Property Managers and supporting staff, approximately 800 residential, office and commercial buildings were administered and maintained. Tender calls were prepared for additional residential accommodation in Inuvik, Ft. Simpson, Hay River, and Ft. Smith.

2. Activities for Other Government Departments

The construction of schools for the Department of Indian Affairs and Northern Development were completed at Inuvik and Aklavik at a cost of 1.8 and 1.1 million dollars respectively. A contract was awarded and considerable progress made on the \$435,000 addition to the school at Pine Point. The construction of Children's Receiving Homes at Inuvik, Hay River and Ft. Smith, a program involving approximately 0.5 million dollars, was near completion at the end of the year. Other works conducted for I.A. & N.D. included a water supply system for the settlement of Coppermine, for which a \$243,000 contract was awarded and materials delivered. Work on the Water Supply and Sewage Disposal project at Baker Lake, amounting to \$260,000 was 95% completed.

The development of the Northern Roads System for I.A. & N.D. was continued.

Good progress was made on the 3.4 million dollar contract for grading on the Mackenzie Highway extension from mile 167 to mile 229, and clearing to mile 286. Revisions to the airport road and related work at Yellowknife, totalling \$610,000 were well advanced.

Field surveys, aerial photography, mapping and other investigations relating to future roads were carried out at various locations, including Ft. Smith towards Ft. Reliance, Ft. Simpson southerly to the B.C. boundary, Inuvik to Ft. McPherson and the Ingraham Trail.

The drill hall and alterations to the administration building were completed for the Department of National Defence at Inuvik. The final cost for these projects was approximately \$925,000.

Additional standby emergency equipment was provided and installed in the new boiler room extension to the Inuvik Hospital for National Health and Welfare. The total cost of the entire project amounted to approximately \$247,000.

Under the R.C.M.P. Northern Construction Program units to serve as warehouses, workshops, and/or garages, and preconstructed patrol cabins were erected in Ft. Norman, Ft. Franklin, Ft. Simpson, Ft. Providence, Ft. Resolution, Hay River, Tuktoyaktuk and Rankin Inlet at a total cost of approximately \$117,000.

In liaison with local officers, Accommodation Services prepared estimates and subsequently administered the program of repair and maintenance for buildings under the control of the R.C.M.P., Ft. Simpson Division.

Leases were negotiated in respect to additional office space for the Departments of Justice, Energy, Mines and Resources and I.A. & N.D. at Yellowknife. Planning was undertaken in respect to the provision of additional space in the Federal Building, Yellowknife, for the Departments of Justice, Manpower and Immigration and to improve the Post Office facilities. The building formerly used as the Liquor Store, at Hay River was acquired under lease from the Government of the Northwest Territories. The building will be converted to provide court room facilities for the Department of Justice.

B. Pacific Region (Yukon)

In the Yukon and Northeastern British Columbia the greater part of the work of Accommodation Services involved the routine maintenance, repair and upkeep of federal buildings and northern pool housing, mostly with the department's own forces. A contract was awarded for street paving in the Valleyview subdivision at Whitehorse, Y.T. and seven other small contracts were awarded under the Improvements General program.

At Fort Nelson, B.C. an addition to the R.C.M.P. Detachment buildings was completed and the construction of a Cell Block for the Detachment at Watson Lake, Y.T. was begun. Eight small prefabricated steel buildings were also erected for the R.C.M.P. at five locations in the Yukon Territory, including one at the village of Old Crow by departmental forces.

The program of upgrading and developing the road system in the North continued.

On work undertaken for the Department of Indian Affairs and Northern Development on the Northern Roads program, the grading contract for the final portion of the Ross River – Carmacks Development Road, Mile 50 to Mile 92, was completed. A contract for two permanent bridges at Bearfeed Creek and Drury Creek on this road was also awarded, with only the Bearfeed Creek bridge being completed. A temporary bridge crossing was provided at Drury Creek in order to open the road for traffic, most of it destined for the large lead-zinc property being developed by the Anvil Mining Corporation at Faro, Y.T. The entire road link between Watson Lake and Carmacks was renamed the Campbell Highway in honour of Robert Campbell, a Hudson's Bay Company trader, who was the first explorer to traverse this route.

Reconstruction of the first 38 miles of the Boundary Road was completed, and a contract for a crushed gravel surface for this road was awarded and completed. A contract was also awarded for the construction of a precast concrete approach ramp for the ferry at Dawson City, Y.T. and work on this project is underway.

Pre-engineering studies of the proposed Dempster Highway location continued, with the completion by the airphoto contractor of the photogrammetric mapping and soils interpretation of the route corridor. A field survey for the upgrading of this road from Mile 0 to Mile 60 was also initiated.

A reconnaissance by helicopter of a possible route into the Bonnet Plume River was also undertaken, as well as an examination of Christie Pass with a view to its possible use as an alternate to the present Macmillan Pass route on the Canol Road, a proposal which was not considered to serve any useful purpose at this time.

A permanent inspector was stationed at Faro Camp of the Anvil Mining Corporation during the construction under a cost-sharing agreement with the Government of Canada of the Corporation's mine access road, which included a bridge across the Pelly River. Final inspections of mine access roads to Arctic Gold and Silver Mines Limited at Carcross, Y.T. and to Mt. Nansen Mines Limited near Carmacks, Y.T. were also carried out, as well as periodic inspections of a road still under construction to Venue Mines Limited in the Carcross area.

Maintenance of the Northwest Highway System continued. A third three-year maintenance contract was awarded for the section of the Alaska Highway from Mile 496 to Mile 626.6; as a result of this award, maintenance for the whole of the British Columbia section of the Highway east of Watson Lake, Y.T. is now being carried out by private contractors. Crushing and surfacing contracts between Mile 236 and Mile 315 and Mile 358 – Mile 378 were also completed in this section.

On the Yukon portion of the Northwest Highway System routine maintenance tasks continued to be performed by departmental forces. During the summer period three surfacing crews, four crusher crews, two realignment crews, two culvert crews, one dust control crew and three crews on miscellaneous works were employed. During the winter, snow removal was carried out on the Alaska Highway and the Canadian section of the Haines Cut-off Road.

As part of the continuing Northwest Highway System Bridge Renewal program, new bridges were constructed, by contract, over the Sikanni Chief River, the Takhini River and the Aishihik River. The bridges at Morley River and Swift River were completed. Eight wooden bridges were replaced by multiplate culverts. Pre-engineering for this program was continued.

C. Quebec Region

Note:— covered under “Plans for 1969”.

PLANS FOR 1969

A. Western Region (Northwest Territories and Fort Churchill)

1. DPW Activities

An estimated amount of \$75,000 will be spent on housing for Federal Government employee at Ft. Simpson. Alterations to the Federal Building at Yellowknife for the Department of Justice are expected to be completed by the middle of the year at an estimated cost of \$65,000. In addition, approximately \$75,000 will be spent on alterations to the Public Building at Inuvik.

Replacement of the National Harbours Board Waterline and construction of a Water and Sewage System at an estimated cost of \$1,000,000 will be undertaken at Fort Churchill.

Navigational improvements on the Mackenzie River System will be continued. The excavation of an improvement channel through the Sans Sault Rapids on the Mackenzie River will be accelerated. Wharves are to be installed at Ft. McPherson and Wrigley. The survey work related to all phases of marine engineering will also be continued.

2. Activities for Other Government Departments

The water supply projects at Coppermine and Baker Lake will be completed.

Children's Receiving Homes at Ft. Smith and Hay River and the schools at Yellowknife and Pine Point will be completed in the first half of the year.

Work on two standard classrooms and gymnasium addition to the school at Baker Lake in the order of \$500,000. will be commenced in the second half of the year.

Work on field surveys, mapping, aerial photographs and other investigations commenced during 1968 at Artic Red River, Ft. Smith — Ft. Reliance, Ft. Smith — Ft. Nelson and Ingraham Trail, will be finalized.

To assist in both pre-engineering and future construction, line clearing contracts totalling approximately \$80,000. will be undertaken in both the Mackenzie Delta and the Ft. Simpson — Ft. Liard areas before spring breakup.

Surveys and/or aerial photography for future developments will be commenced for Mackenzie Highway Mile 900 — 1049, Dempster Highway Mile 330 — 390,

Ft. Simpson — Ft. Liard Road Mile 0 — 140, Ingraham Trail Mile 40 — 53, Ft. Resolution access Road Mile 0 — 26 and Rae — Coppermine route.

The Contract for grading Mile 167 — 229 and clearing to Mile 286 will be completed in the second half of the year. A Contract for extending the construction of the highway to Mile 296 (Fort Simpson) has recently been awarded for 2.4 million dollars.

Revisions to the airport road and related work at Yellowknife will be completed in the third quarter.

The new R.C.M.P. Administrative Building originally planned at Ft. Smith will now be constructed at Yellowknife at an estimated cost of \$420,000. Buildings to provide warehousing, married quarters, cell accommodation, heated garages and patrol cabins totalling \$115,000. are planned for erection at Ft. McPherson, Ft. Providence, Sachs Harbour, Cambridge Bay, Coppermine, Ft. Good Hope, Ft. Liard, Holman Island and Rankin Inlet.

Nursing stations at Gjoa Haven and Rankin Inlet are planned for construction at an estimated cost of \$338,000. and \$236,000. respectively.

The docking facility for the D.O.T. Marine Agency in Hay River will be provided under an awarded contract of \$143,000.

B. Pacific Region

No major contracts in the Yukon Territory are anticipated by Accommodation Services in 1969. Routine building maintenance and improvements will continue. The Cell Block for the R.C.M.P. at Watson Lake will be completed, and a sewage system and lagoon at Destruction Bay will be installed. Pre-planning for a new Post Office and Federal Building at Whitehorse will be undertaken.

On the Northern Roads program being carried out for the Department of Indian Affairs and Northern Development, a two-year grading contract will be awarded from Mile 78 to Mile 123 on the Dempster Highway, and a crushing, surfacing and dust control contract will be awarded for the Ross River — Carmacks Development Road (Mile 220 — Mile 362 on the Campbell Highway) in anticipation of the start of Anvil's ore haul in September 1969. The ferry landing at Dawson City, Y.T. will be completed.

A location survey will be undertaken from Mile 123 to approximately Mile 173 on the Dempster Highway

Inspection of the mine access roads being constructed by Anvil Mining Corporation and Venue Mines Limited will be continued until the completion of these projects.

On the Northwest Highway System, routine maintenance will continue. In the British Columbia section, two crushing and surfacing contracts will be awarded for re-surfacing from Mile 350 to Mile 483, while in the Yukon section a contract for realignment, grading and sub-base for Mile 910 to Mile 928 will be awarded in preparation for paving in 1970.

A relocation survey will also be carried out from Mile 285 to Mile 305 in preparation for eventual paving of this portion of the highway.

In the bridge renewal program, new or replacement structures will be erected at Parker Creek, Jackfish Creek, Jarvis Creek and Koidern No. 2 on the Alaska Highway and at Kathleen River, Takhanne River and Blanchard River on the Haines Cut-off Road. In addition, four wooden bridges will be replaced by multiplate culverts.

Pre-engineering for this program will continue.

C. Quebec Region

1. DPW Activities

Great Whate River – This is a wharf extension project started in 1967 for the support of the water transport industry in order to provide an essential service to this isolated community for the transportation of goods. This installation should be in operation by the end of summer 1969. An amount of \$35,000.00 has been expended in 1968.

2. Activities for Other Government Departments

(a) Indian Affairs and Northern Development

Pangnirtung – This construction project started in 1968, comprises two (2) standard classrooms, a gymnasium and other related installations. An amount of \$575,000.00 has been expended in 1968. These facilities should be in service by September 1969.

Cape Dorset – Plans are now completed for a major project of school addition estimated to cost approximately one million dollars. Construction should start by the end of summer 1969 and be completed by September 1970.

Frobisher Bay – Plans will be prepared in 1969 for a project of a receiving home for children, to be constructed and completed in 1970 at a cost of approximately \$200,000.00. Plans are also in preparation for an Academic Occupational School project estimated to cost approximately four million dollars; construction should start late in 1969 and then facilities should be in service by the end of September 1971.

Paint Hills – Plans have been completed in 1968 for the project of construction of a four standard classroom, clinic, playroom and staff residence. This project is scheduled for construction during 1969 pending acquisition of a site by the client department.

(b) Royal Canadian Mounted Police

Pangnirtung – During 1968, minor works were carried out to complete the project of erection of prefabricated married quarters.

Lake Harbour — During 1968, minor works were carried out to complete the project of erection of prefabricated married quarters.

Frobisher Bay — Erection of a prefabricated warehouse including the construction of the supporting pad was carried out in 1968 by personnel of the Indian Affairs and Northern Development, under our supervision. An amount of approximately \$3,000.00 was expended in 1968.

Cape Dorset — Erection of a prefabricated warehouse and workshop including the construction of a supporting pad was carried out in 1968 by personnel of the Indian Affairs and Northern Development under our supervision. An amount of approximately \$2,500.00 was expended in 1968.

Pond Inlet — Minor works to correct existing deficiencies in the prefabricated married quarters will be undertaken in 1969 at a cost of approximately \$2,000.00.

OPERATIONS (1968)

Ontario Region

1. DPW Activities

In the Ontario Region of the Department of Public Works only that part of Ontario which lies beyond the northernmost reaches of the highway and railway systems is considered to be in the Canadian north. There are no multi-use federal buildings there at the present time which require Public Works to provide its usual range of accommodation services.

2. Activities for Other Government Departments

Public Works, however, is active as a construction agency for other government agencies and departments such as Indian Affairs and Northern Development, Post Office, Royal Canadian Mounted Police, Transport, etc.

1968 saw the completion of a complex consisting of a 4-room school, 4-unit staff hotel and one 3-bedroom staff residence at Sandy Lake for the Department of Indian Affairs and Northern Development at a cost of over \$500,000. Some small wharves, administered by the Department of Transport were at various stages of construction in 1968 on some of the larger rivers which flow into James Bay.

PLANS FOR 1969

Ontario Region

It is expected that for the immediate future Public Works will continue to fulfill only this latter role in that relatively small portion of the Canadian north which lies within Ontario. As the smaller settlements and outposts develop and reach a point, at some time in the future, when government activities at those places require accommodation which can best be provided by Public Works, then Public Works will assume its broader role as planner, builder, and caretaker of federal accommodation.

In 1969, a school and teacherage addition at Kasabonika is being planned for DIAND. Work will continue on a number of small wharf projects.

**ROYAL CANADIAN MOUNTED
POLICE**

ROYAL CANADIAN MOUNTED POLICE

Responsibilities: The basic responsibility of the Royal Canadian Mounted Police in the Yukon Territory and the Northwest Territories is the preservation of peace, and the maintenance of law and order. The Force is the only law enforcement agency in the North, and is responsible for the enforcement of all Federal Statutes, Territorial laws, and through agreement with six municipalities, enforces municipal by-laws in the communities of Dawson, Whitehorse, Yellowknife, Hay River, Fort Smith and Inuvik.

Long Term Plans:

During the past several years, a great many changes have taken place in Northern Canada. These changes have resulted from mining and exploration activity, Indian and Eskimo migration to the main centres of activity, improved lines of communication, and general improvement in the economic structure of the North. The mining activity, in particular, has been responsible for the establishment of new communities, and has been directly responsible for the decline of other communities, and has been directly responsible for the decline of other communities, by attracting the residents to the new areas of activity and prosperity.

This set of circumstances has required us to take a good look at our operation in the Northwest Territories and the Yukon Territory with a view to adjusting our priorities accordingly. There is no longer the same need for frequent and regular patrols to outlying Indian and Eskimo hunting camps as they are gradually disappearing. For the most part, the Force polices the northern towns and settlements on foot, by patrol car and by power toboggan much the same as their counterparts patrol the villages and towns in the south.

Economic expansion, although highly desirable, extracts a toll in the inherent problems of adjustment on the part of the native northerners. Encouraging signs are evident, however, as the younger generation is acquiring a broader education which will, in time, equip them to solve their own social problems.

Although the responsibilities of the Force will continue as above, there is a general trend that the policing requirements in the southern portions of the Yukon and Mackenzie River districts will, each year, more closely resemble those in the greater rural and urban detachments in the provinces.

Review of 1968

Operations:

"G" Division, which encompasses both the Yukon Territory and the Northwest Territories, was comprised of five Sub-Divisions, but was this year reduced to four, with the closing of Central Arctic Sub-Division with headquarters at Churchill, Manitoba. The detachments therein are now administered from Fort Smith. "G" Division contains 42 Detachments. Members stationed at these Detachments patrol in excess of 2,000,000 miles annually, by motor vehicle, motor toboggan, dog team, aircraft, railroad and on foot. There are still some natives, especially in the central and eastern Arctic, reluctant to leave the land and members of the Force are still

required to undertake long and sometimes arduous patrols similar to those of yesterday. The purpose of these patrols is to visit Eskimo hunting camps to ensure their welfare and to inoculate their dogs against rabies and distemper.

Fort Smith Sub-Division accounts for the bulk of the crime in the Northwest Territories. The establishment of the capital at Yellowknife, and the resultant upsurge of activity has significantly increased the police work in that area. R.C.M.P. duties in the Yukon Territory are not unlike those of most parts of Canada with only one detachment out of ten, now considered 'isolated'. In the remote areas, the Force's duties extend beyond normal police work, to vital statistics, health surveys, and a multitude of other things.

Plans for 1969:

As a result of a thorough study by the Force, it has been decided that the minimum establishment of the Force's isolated and semi-isolated Northern Detachments should consist of two persons; one will be a regular uniformed member and the other an Eskimo Special Constable. The duties of the majority of the Force's Eskimo Special Constables have been traditionally: dog driver, fisherman, hunter, guide and general handyman. These positions have been classified now as "Local Assistants". Where the duties of the Special Constable position have evolved to the point where interpreting and assisting in an enforcement capacity is involved, as well as guiding patrols, the position will be reclassified and up-graded to that called "Investigator".

Investigator positions will also be graded at different levels depending upon the workload and the demands of each individual position. The Special Constable Investigators involved will be classified at different levels depending upon the ability and experience of the individual.

This program will be implemented in the near future and at present the Force is assessing each Special Constable to ascertain his suitability or otherwise for reclassification. It is not expected that any of the present Eskimo Special Constables will suffer as a result of this arrangement, while there will be possibilities for advancement for a number of existing Special Constables, and the opportunity for engagement of others. It will likely be well into the new fiscal year before the overall adjustment has been made. It is hoped that this will be a step forward in providing opportunities for the employment of Northerners by the Royal Canadian Mounted Police.

The recommendation that the Fort Smith Sub-Division Headquarters be moved to Yellowknife, the seat of Territorial Government, has not as yet been finalized.

Employees:

The establishment of "G" Division totals 226 positions. Of these, 200 are for members of the Force — all categories, and 26 are Public Service positions. Although there will be a certain amount of change in the coming year, by category, it is anticipated that the overall total will continue at approximately the above level.

DEPARTMENT OF TRANSPORT

Department of Transport
CIVIL AVIATION BRANCH

**Northern Development in Air
Traffic Control 1968**

Responsibilities The provision of Airport Control Service at those aerodromes in Northern Canada which have the traffic volume to justify the control, Flight Information, Flight Advisory and alerting to aircraft operating in accordance with Instrument Flight Rules in the area.

Long Term Plans

To extend the provision of area control service in air space above 23,000 feet to the geographical north pole. New control towers are programmed for the following years:

Peace River, Alta.	— 1970 — 1971
Yellowknife, NWT	— 1974 — 1975
Fort Nelson, B.C.	— 1974 — 1975
Grande Prairie, Alta.	— 1974 — 1975
Inuvik, NWT	— 1975 — 1980

A close watch is kept on development in the North such as oil exploration, mining and major power developments to ensure that air traffic generated by such industrial activity will be provided with air traffic service if, for reasons of safety, such services are required.

Review of 1968 Operations

Airport Control Service was initiated at Wabush, Nfld. with the commissioning of an air traffic control tower on June 24, 1968. During the ensuing six months 10,773 total aircraft movements were accommodated at Wabush.

The Airport Control Tower at Whitehorse, Y.T. controlled 34,261 total aircraft movements during 1968 and that at Fort St. John, B.C. a total of 24,303.

The Goose Bay Area Control Centre was phased out of operation and responsibility for the Goose Flight Information Region and part of the Northern Control Area was allocated to Moncton Area Control Centre for the provision of essential services. The Edmonton Area Control Centre assumed responsibility for the provision of service for the remainder of the northern control area and the Upper Flight Information Region.

All International and Domestic flights operating above 23,000 feet between the 55° and the 72° north parallel were provided with Area Control Service.

All flights operating between Alaska and Europe which crossed the upper Flight Information Region north of the 72° north parallel were provided with Flight Information Service by the Edmonton Area Control Centre.

The Edmonton Flight Information Region below 23,000 feet has been extended to the geographical North Pole as a consequence of Edmonton Area Control Centre assuming responsibility for providing Flight Information Service in this area.

Plans for 1969-70

It is intended to extend that portion of the Edmonton northern control area which lies above 23,000 feet from its present northern boundary (72° north parallel) to the geographical North Pole.

At Gillam, Manitoba a remotod controller/pilot radio facility will be installed to be operated from Thompson, Manitoba to allow the introduction of Air Traffic Services for the benefit of flight operations associated with the mining developments in the area.

Active investigation will continue during 1969 to improve the ATC communication capability over northern Canada with the objective to improving the service provided to the International Air Carriers.

Department of Transport

Air Services

Airports and Fields Operations Branch

Responsibilities

The operation and maintenance of airports owned by the Department of Transport in the north.

Long Term Plans

To anticipate the future needs of Airports and Field Operations in the north in conjunction with northern development.

Review of 1968 Operations

Plans for 1969 Operations

Churchill Falls, Labrador

(a) Development of a mainline airport

(a) Continuing development

Wabush, Labrador

(a) Construction of an emergency power unit building c/w cables

(a) To be completed

(b) Construction of 2 single dwellings

(b) To be completed

Goose Bay, Labrador

(a) Renovations to buildings

(a) To be completed

(b) Recap apron and taxiways

Fort Chimo, Quebec

(a) Relocation of power and control lines completed

(b) Extension to equipment storage building

(b) To be completed

(c) Repairs to Runway 14/32

(c) To be completed

(d) Construct new road

(e) Install water and sewer services

Schefferville, Quebec

(a) Airport boundary fencing

(a) To be completed

Churchill, Manitoba

(a) Repair Runway 15/33

(a) To be completed

Coral Harbour, N.W.T.

(a) Fuel oil storage completed

(b) Installation of water and sewage system

Review of 1968 Operations

Resolute, N.W.T.

- (a) Construction of warehouse

Note: Support was provided to oil development and exploration being carried out by various companies. Support was also supplied to various Scientific explorations such as the Humphrey's, the Plaistead, and the British Trans Arctic Expedition during the year.

Fort McMurray, Alta.

- (a) Sand storage building completed
- (b) Installation of a fire alarm system

Fort Nelson, B.C.

- (a) Water lines rehabilitated
- (b) Extension to operations building

Fort Smith, N.W.T.

- (a) Extension to air terminal building

Hay River, N.W.T.

- (a) Construction of Field Electrical Centre
- (b) Construction of maintenance garage

Watson Lake, N.W.T.

- (a) Power distribution system rehabilitated
- (b) Maintenance garage and firehall

General

Equipment such as trucks, tractors, runway sweepers and snow blowers were delivered to various northern sites.

Plans for 1969 Operations

- (a) To be completed
- (b) Installation of fire alarm facilities
- (b) To be completed
- (c) Installation of emergency power
- (b) To be completed
- (a) To be completed
- (a) To be completed
- (b) To be completed
- (c) Construction of new terminal/operations building
- (b) To be completed
- (c) Emergency power unit building to be constructed

New equipment including tractors and snow blowers is on order for delivery by sea lift on McKenzie River Barge during 1969.

AIRWAYS

The Department of Transport has agreed to provide the Department of Indian Affairs and Northern Development \$100,000 towards the development of a remote airport at Coppermine, N.W.T. The latter department provided funds in 1968-69 for the purchase of construction equipment and last summer completed an access road to the airport site, using native labour supervised by a Department of Transport engineer.

It is anticipated that runway construction will commence in the summer of 1969 and that approximately \$80,000 of the department's contribution of \$100,000 will be spent. It is anticipated that the airport will be completed in 1971 with all additional funds required for the purpose being provided by the Department of Indian Affairs and Northern Development.

SITE	PROJECT	ESTIMATED 1968-69	EXPENDITURE 1969-70
Fort Smith, N.W.T.	— Abbreviated Vasis on runway 10	\$ 1,800.	\$ 16,200.
Hay River, N.W.T.	— Abbreviated Vasis on runway 12	1,800.	16,800.
do.	Construct runway 12-30, taxiway and apron	700,000.	—
do.	Lighting runway 12-30	45,000.	—
do.	Extend runway 03-21	134,000.	—
do.	Install I.L.S. on runway 30	—	172,000.
Inuvik, N.W.T.	— Extend Parking Area, construct taxiway and pave runway, apron, etc.	317,500.	869,000.
do.	ILS Localizer approach NDB	58,900.	—
do.	Glide Path and MM on runway 05	—	70,600.
Norman Wells, N.W.T.	— Pave runway, taxiway and apron	3,000.	877,400.
Watson Lake, Y.T.	— Vasis on runway 26	5,400.	19,600.
do.	Install NDB & VHF (Liard River)	—	81,200.
Yellowknife, N.W.T.	— Abbreviated Vasis on runway 14	1,800.	22,800.
do.	ILS on runway 32	177,000.	—
Baker Lake, N.W.T.	— Lengthen & improve airstrip	—	180,000.
Resolute Bay, N.W.T.	— Construct second runway 3000 ft. x 150 ft.	60,000.	200,000.
Spence Bay, N.W.T.	— Establish NDB	2,000.	16,000.
Gjoa Haven, N.W.T.	— Establish NDB	14,000.	—
Pelly Bay, N.W.T.	— Establish NDB	17,000.	—
Repulse Bay, N.W.T.	— Establish NDB	16,200.	—
Whale Cove, N.W.T.	— Establish NDB	15,000.	—

Department of Transport

Telecommunications & Electronics Branch

Responsibilities: To provide radio aids to air and marine navigation; to provide radio facilities for various scientific organizations and for meteorological observations; to provide other telecommunication facilities as required.

Long Term Plans:

To expand operations in response to developing technology on increasing demand; the further development of telecommunications facilities for the transmission and reception of voice and record traffic to additional stations as required, which involve the administration of services for Government needs, and may include public needs as well.

Review of 1968 Operations

Evaluation to determine the applicability of Omega Navigational System for both Air and Marine navigation in the Canadian Arctic and Northern Canada was undertaken during this period. Data was collected at 20 stations and is now being analyzed.

Baker Lake

Installation of radioteletype circuit to Churchill.

Border, P.Q.

Radiobeacon placed in service.

Churchill, Man.

Ship-shore message and marine telephone public correspondence service commissioned on 4 MHz single sideband. Instrument Landing System installed and placed in operation. Radiobeacon placed in service.

Churchill Falls, Lab.

Radiobeacon placed in service.

Contwoyto Lake

Upgraded NDB antenna system.

Coral Harbour, N.W.T.

Ship-shore message and marine telephone public correspondence service commissioned on 4MHz single sideband.

Fort Chimo, P.Q.

Radiobeacon placed in service.

Fort Franklin

NDB installed and commissioned September 27, 1968.

Fort Smith

Installed new control equipment.

Frobisher, N.W.T.

Ice chart facsimile transmissions on low frequency operated during navigation season for evaluation purposes. Automatic morse keying equipment installed for radio-telegraphy broadcasts of weather and ice conditions.

Frobisher Bay

High power radio beacon relocated to increase coverage. Error protected teletype circuit to Coral Harbour closed out.

Cjoa Haven

NDB installed and commissioned August 8, 1968.

Hay River

Instrument Landing System sites selected.

Inuvik, N.W.T.

Ship-shore radiotelegraph message service commissioned on 6493/6292.5 KHz. Instrument Landing System installed and placed in operation.

JAW Stations (Alert, Mould Bay, Eureka, Isachsen)

Communications facilities modernized. Radioteletype circuit Eureka to Resolute Bay installed. Radioteletype network to all stations being completed.

Lynn Lake, Man.

Air-ground communications facilities installed to provide regular airport advisory and other aeronautical services on a 16 hour per day basis.

Norman Wells

Established new transmitter and receiver sites and installed new control equipment.

Nottingham Island

Refurnished operations room and installed new control equipment. Replaced LF communications transmitter.

Pelly Bay

NDB installed and commissioned August 2, 1968.

Repulse Bay

NDB installed and commissioned January 6, 1968.

Resolute, N.W.T.

Ship-shore radiotelegraph message service commissioned on 500 KHz. H.F. ship-shore radiotelegraph frequencies 6493/6292.5. 8712.8390 and 13089.5/12585 KHz. decommissioned.

Sachs Harbour

Teletype circuit to Inuvik completed.

Whale Cove

NDB installed and commissioned August 27, 1968.

Yellowknife

Instrument Landing System construction commenced. New transmitter site established.

Yukon Territory

Mayo

New radio control building constructed at airport.

Whitehorse

New NDB building completed and equipment transferred. Commissioned December 13, 1968.

Hudson Bay and Strait Stations

Radiotelegraph and radiotelephone weather broadcasts were rescheduled to make marine forecasts available to shipping at more convenient times.

The Air Traffic Control national interphone network was extended to Cambridge Bay.

Northwest Territories

Alert

Replace obsolete NDB equipment.

Cambridge Bay

Provide Air-Ground communications facilities.

Chesterfield Inlet

Decommission marine station.

Eureka

Replace obsolete NDB equipment.

Fort Smith

Relocate aeradio station.

Frobisher and Resolution Island

Provision of high-frequency radiotelephone ship-shore service on a 4 MHz single sideband to improve radiotelephone coverage of the Hudson Strait, Davis Strait and Labrador Sea.

Hay River

Establish remote receiver site, transmitter site, and Instrument Landing System.

Inuvik

OLS glide path and middle market sites to be established.

Isachsen

Replace obsolete NDB equipment.

Mould Bay

Replace obsolete NDB equipment.

Resolute Bay

Refurnish ionosphere station.

Spence Bay

Establish NDB.

Yellowknife

Instrument Landing System to be established.

Yukon Territory**Watson Lake**

Establish NDB & VHF facilities (Liard River)

Whitehorse

VOR/DME facility to be established.

Extend ATC interphone service to Inuvik and intermediate points.

Department of Transport

CONSTRUCTION ENGINEERING AND ARCHITECTURAL BRANCH

Responsibilities: To provide construction services in the field of Air Services facilities development for the Department of Transport.

Long Term Plans

Normal planning based on Departmental 5 Year Plan to design and coordinate the construction of airport facilities, lighting, buildings and other miscellaneous projects.

Review of 1968 Operations

1. *Runways and Lighting Projects:*

Churchill Falls, Fort Chimo, Frobisher Bay, Inoucdjouac, Shefferville, Churchill, Resolute Bay, Fort McMurray, Fort Nelson, Fort St. John, Hay River, Inuvik, Yellowknife.

2. *Buildings:*

Fort Chimo, Churchill, Cree Lake, Resolute Bay, Trout Lake, Cambridge Bay, Fort Good Hope, Fort McMurray, Fort Nelson, Fort Reliance, Fort Resolution, Fort St. John, Fort Smith, Hay River, Norman Wells, Peace River, Watson Lake, Mayo, Yellowknife, Resolute Bay.

3. *Aids to Air Navigation:*

Churchill Falls, Fort Chimo, Gjoa Haven, Pelly Bay, Spence Bay, Whale Cove, Contwoyto Lake, Fort Franklin, Fort McMurray, Fort St. John, Watson Lake.

4. *Miscellaneous Projects* (Water and Sewer, Power, Storage, Space, etc.):

Fort Chimo, Hall Beach, Moosonee, Baker Lake, Coral Harbour, Resolute Bay, Fort Nelson, Fort Simpson, Fort Smith, Hay River, Norman Wells, Watson Lake.

Approximate Value of Construction Projects: \$4,833,000

Plans for 1969

1. *Runway and Lighting Projects:*

Churchill Falls, Fort Chimo, Schefferville, Baker Lake, Churchill, Resolute Bay, Coppermine, Hay River, Inuvik, Norman Wells, Peace River, Yellowknife, Paint Hills.

2. *Buildings:*

Hopedale, Frobisher Bay, Resolute Bay, Cambridge Bay, Dawson Creek, Fort Nelson, Fort Resolution, Fort St. John, Fort Simpson, Hay River, Norman Wells, Watson Lake.

3. *Aids to Air Navigations:*

Churchill Falls, Spence Bay, Fort McMurray, Fort Smith, Grande-Prairie, Hay River, Inuvik, Watson Lake, Yellowknife.

4. *Miscellaneous Projects* (Water and Sewer, Power, etc.):

Hopedale, Fort Chimo, Nottingham Island, Poste-de-la-Baleine, Coral Harbour, Resolute Bay, Cambridge Bay, Fort McMurray, Hay River, Norman Wells, Watson Lake.

Approximate Value of Construction Projects: \$6,720,000

Department of Transport

Marine Services

Responsibilities: To carry out and co-ordinate the delivery of cargo and passengers for Canadian Government, USAF, and commercial concerns; servicing and provision of aids to navigation in the Hudson Strait and Bay; icebreaking and escorting where required and also to conduct scientific work such as: oceanographic and hydrographic surveys and to arrange and provide for stevedoring services at Goose Bay.

Long Term Plans:

To continue to improve Marine work in the North and planning to meet any anticipated resupply or requirements in the future.

Review of the 1968 Operations:

The resupply of the Joint Arctic Weather Stations was carried out successfully to Resolute Bay using one dry cargo vessel and one tanker supported by icebreakers. The resupply of Eureka and sites further North was carried out by the CCGS "John A. Macdonald".

Icebreaker assistance was also provided for the Panarctic Tug and Barge operation from Resolute Bay to Rea Point on the east coast of Melville Island. Icebreaker assistance was also provided to the Aquitaine Company exploration work in the Hudson's Bay area.

The CCGS "Labrador" carried out scientific work on behalf of the Defence Research Establishment Pacific and the Hydrographic Service of the Department of Energy, Mines and Resources. In addition to these surveys the CCGS "John A. Macdonald" conducted a probe in Victoria Strait.

The CCGS "Camsell" also assisted shipping in the Western Arctic; serviced aids to navigation and conducted hydrographic surveys.

The department arranged for and provided fourteen Coast Guard vessels, four dry cargo vessels, four oil tankers and eleven other commercial vessels which carried cargo on a rate per ton basis.

Approximately 112,000 short tons of general cargo and bulk oil was transported and handled in the Arctic in 1968. A breakdown of this tonnage handled by the various vessels is provided with this report. Also attached is a report of the number of stevedores and bargemen employed as casual labourers for this year's Arctic operation.

Plans for 1969:

Plans for the 1969 season are expected to be similar to the previous year. In all probability additional assistance by icebreakers will be required for scientific groups and exploration companies. The usual servicing of aids to navigation in Hudson's

Bay and Strait and icebreaker assistance in conjunction with the Arctic Resupply will be provided.

STATEMENT OF TONNAGES SHIPPED
TO THE EAST/WEST ARCTIC DURING
1968

VESSEL	FROM	TO	WEIGHT (LBS.)
"Eider"	Montreal	Cartwright	135,954
	"	Battle Harbour	573,251
	"	Resolution Is.	20,595
	"	Northern Sites	15,000
	"	Saglek	5,264
	"	Fort Chimo	12,180
	"	Port Burwell	642
	"	George River	185
	"	Hall Beach	1,116
	"	Battle Harbour	6,220
	"	Cartwright	890
	"	Great Whale	700
	"	Goose Bay	162,473
	Churchill	Pangnirtung	1,745
	"	Repulse Bay	142,132
	"	Hall Beach	68,049
	"	Pelly Bay	3,247
	"	Igloolik	198,046
	Tanker	Fort Chimo	7,458,000
	Frobisher	Quebec	815
	"	Montreal	7,050
	Pangnirtung	Montreal	23,000
	Goose Bay	Montreal	403,200
			9,239,754
			4,620
"Gannet"	Montreal	Dew Line	546,117
	"	Broughton	6,459
	"	Cape Christian	3,215
	Churchill	Port Harrison	130,192
	"	Povungnituk	78,050
	"	Lake Harbour	89,198
	"	Cape Dorset	6,367
	Port Harrison	Churchill	58,005
	" "	Montreal	11,865
	Povungnituk	Montreal	33,046
	Cape Dyer	"	2,000
	Broughton	Cape Dyer	46,000
	Coral Harbour	Cape Dorset	60,000
	" "	Baker Lake	106,000
	Frobisher Bay	Cape Dorset	29,625
	Brevoort	Frobisher	36,000
	Dye Main	"	146,000
			1,388,142
			694

VESSEL	FROM	TO	WEIGHT (LBS.)
"Puffin"	Montreal	Cape Hopes Advance	271,518
	"	Nottingham Island	302,200
	Churchill	Eskimo Point	1,959,062
	"	" "	253,983
	"	Baker Lake	565,800
	"	" "	330,191
	"	Sugluk	395,875
	"	Ivuyivik	5,765
"Puffin"	Churchill	Port Burwell	22,600
	"	Montreal	138,895
	"	Whale Cove	168,886
	Eskimo Point	Churchill	34,230
	Whale Cove	"	8,339
	Baker Lake	"	5,350
	Chesterfield	"	8,975
	Whale Cove	Montreal	15,124
	Port Burwell	"	4,000
	Sugluk	"	4,000
	Tanker	West H.B. Ports	<u>9,630,900</u>
			14,125,693
			7,062
"Raven"	Montreal	Ivugivik	20,666
	"	Baker Lake	709
	"	Belcher Islands	160,923
	"	Port Harrison	9,563
	"	Great Whale	175,632
	Churchill	Fort George	1,968,000
	"	Belcher Islands	48,369
	"	Great Whale	2,023,053
	"	" "	7,293
	"	Eskimo Point	825,330
	"	Chesterfield	154,264
	"	Rankin Inlet	983,407
	"	Hudson Strait Ports	173,800
	"	Quebec	45,025
	Great Whale	Churchill	10,934
	Ivugivik	"	2,000
	Chesterfield	"	31,092
	Eskimo Point	"	716
	Great Whale	Port Harrison	1,115
	Port Harrison	Belcher Islands	<u>225,000</u>
			6,866,891
			3,434
"Skua"	Montreal	Dew Line Sites	120,963
	"	Longstaff Bluff	4,410
	"	Hall Beach	6,000
	"	Broughton	352,697
	"	Padloping Island	26,413

VESSEL	FROM	TO	WEIGHT (LBS.)
	Churchill	Eskimo Point	5,062
	"	Cape Dorset	27,911
	"	Pangnirtung	16,089
	"	Nottingham	9,370
	Hall Beach	Pangnirtung	1,745
	" "	Longstaff Bluff	258,050
	Cape Hooper	Cape Dyer	50,000
	Broughton	Hall Beach	44,715
	Foxe Main	Dye Main	82,000
	Rowley Island	Igloolik	50,200
	" "	Montreal	12,560
	Tanker	Various	<u>12,482,533</u>
			13,550,718
			6,775
"C.D. Howe"	Montreal	Cape Dorset	166,771
	"	Pangnirtung	2,844
	"	Arctic Bay	117,271
	"	Grise Fiord	7,236
"C.D. Howe"	Montreal	Lake Harbour	560
	"	Wakeham	720
	"	Pond Inlet	440,289
	"	Resolute Bay	7,406
	"	Strathcona Sound	2,465
	"	Sugluk	21,844
	"	Frobisher Bay	14,494
	"	Clyde River	583
	"	Ivugivik	935
	"	Koartak	241
	"	Port Burwell	5,169
	"	Various	59,645
	Broughton	Frobisher	5,000
	Grise Fiord	"	59
	Lake Harbour	"	40,000
	Pangnirtung	"	1,689
	Pond Inlet	"	1,000
	" "	Arctic Bay	1,200
	Sugluk	Deception Bay	5,000
	Coral Harbour	Resolute Bay	34,000
	Cape Dorset	Pond Inlet	6,000
	Pond Inlet	Pangnirtung	5,000
	Arctic Bay	Quebec	2,255
	Grise Fiord	"	93,439
	Pond Inlet	"	4,050
	Cape Dorset	"	2,675
	Clyde River	"	107,055
	Port Burwell	"	11,340
	Lake Harbour	"	12,050
	Pangnirtung	"	<u>42,092</u>
			1,233,177
			616

VESSEL	FROM	TO	WEIGHT (LBS.)
"d'Iberville"	Montreal	Alert	3,474
	"	Arctic Bay	9,108
	"	Eureka	4,459
	"	Isachsen	3,797
	"	Mould Bay	3,457
	"	Pond Inlet	93,055
	"	Resolute Bay	40,315
	"	Strathcona Sound	592,353
	Broughton	Grise Fiord	220,000
	Clyde River	" "	177,000
	Resolute Bay	" "	175,612
	Churchill	" "	2,317
	Strathcona Sound	Montreal	43,650
	Pond Inlet	"	4,380
	Arctic Bay	"	2,000
			<hr/>
			1,374,977
			687
"J.A. McDonald"	Montreal	Eureka	479,046
	"	Cape Sparbo	6,416
	"	Arctic Bay	6,875
	"	Frobisher Bay	41,000
	"	Tanquary Fiord	97,581
	"	Greely Fiord	250,722
	"	Resolute Bay	40,977
	"	Pond Inlet	10,279
	"	Grise Fiord	244,486
	"	Eureka	240,154
	"	Various	3,663
	Churchill	Repulse Bay	80,198
"J.A. Macdonald"	Tanquary Fiord	Resolute Bay	5,084
	Sea	Eureka	4,459
	Thule	"	4,240
	Resolute Bay	Dartmouth	354,719
	Cape Sparbo	"	500
	Resolute Bay	Montreal	80,133
			<hr/>
			1,950,532
			975
"Narwhal"	Dartmouth	Clyde River	6,294
	"	Igloolik	3,221
	"	Repulse Bay	315
	"	Hall Beach	756
			<hr/>
			10,586
			5
"Montcalm"	Montreal	Pangnirtung	86,782
	"	Igloolik	2,096
	"	Clyde River	417
	"	Inugsuin Fiord	16,208

VESSEL	FROM	TO	WEIGHT (LBS.)
Montreal		Povungnituk	95,537
"		Padloping	64,843
"		Various	10,256
Churchill		Cape Dorset	465,273
"		Igloolik	29,896
Broughton		Churchill	27,800
Povungnituk		"	1,487
Cape Dyer		Broughton	119,784
Broughton		Cape Hooper	42,832
Cape Hooper		Cape Dyer	49,936
Cape Dyer		Cape Hooper	8,500
Padloping		Broughton	288,320
Broughton		Cape Christian	65,093
Inugsuin Fiord		Montreal	1,500
Broughton		"	8,380
			<hr/>
			1,384,940
			692
"N.B. McLean"	Montreal	Sugluk	176,581
"	"	Cape Dorset	1,060
"	"	Resolute Bay	750
"	"	Churchill	9,610
"	"	Isachsen	4,420
"	"	Mould Bay	6,425
"	"	Koartak	14,084
"	"	Port Burwell	285
"	"	Wakeham Bay	53,787
"	"	Nottingham Island	4,340
"	"	Cape Hopes Advance	2,745
"	"	Pangnirtung	257
"	"	Clyde River	4,005
"	"	Various	24,147
Sugluk		Churchill	3,360
Churchill		Grise Fiord	2,317
"		Pond Inlet	43,608
"		Resolute Bay	392
"		Frobisher	2,333
Frobisher Bay		Cape Dorset	35,281
" "		Coral Harbour	18,000
" "		Nottingham Island	308
" "		Resolute Bay	20,509
"N.B. McLean"	Frobisher Bay	Lake Harbour	1,000
" "	"	Clyde River	4,925
" "	"	Broughton Island	9,875
" "	"	Cape Christian	3,950
Coral Harbour		Broughton Island	876
Sugluk		Nottingham Island	73
Lake Harbour		Frobisher Bay	20
Coral Harbour		Lake Harbour	112
Clyde River		Grise Fiord	177,000
Broughton		" "	220,000

VESSEL	FROM	TO	WEIGHT (LBS.)	
	Coral Harbour	Resolute Bay	130	
	Resolute Bay	Pond Inlet	22,000	
	Nottingham Is.	Cape Hopes Advance	100	
	Various	Quebec	2,000	
	Frobisher Bay	"	520	
	Wakeham Bay	"	4,000	
	Resolute	"	300	
	Cape Dorset	"	27,857	
	Koartak	"	350	
				903,692
				452
"Sir Humphrey Gilbert"	Churchill	Igloolik	176,660	
	"	Repulse Bay	125,790	
	"	Pelly Bay	45,110	
				347,560
				174
"Cabateal"	Montreal	Clyde River	3,207,577	
	"	Resolute	3,631,735	
	"	Pangnirtung	221,505	
	"	Mould Bay	455,178	
	"	Grise Fiord	151,922	
	"	Eureka	544	
	"	Isachsen	53,210	
	"	Alert	4,056	
	"	Frobisher Bay	903,354	
	Churchill	Quebec	120,000	
	Resolute Bay	Montreal	232,581	
	Clyde River	"	23,500	
	Frobisher Bay	"	85,135	
				9,090,307
				4,545
"C.A. Crosbie"	Montreal	Coral Harbour	470,195	
	"	Chesterfield	437,190	
	"	Rankin Inlet	469,426	
	"	Whale Cove	235,258	
	"	Eskimo Point	364,616	
	"	Resolute Bay	180	
	"	Broughton Island	876	
	"	Lake Harbour	112	
	"	Various	42,960	
	Churchill	Eskimo Point	710,874	
	"	Whale Cove	548,380	
	"	Rankin Inlet	2,138,396	
	"	Coral Harbour	4,970	
	Whale Cove	Churchill	65,030	
	Chesterfield	"	8,805	
	Eskimo Point	"	61,800	
	Rankin Inlet	"	84,845	

VESSEL	FROM	TO	WEIGHT (LBS.)
	Chesterfield	Rankin Inlet	481
	Coral Harbour	Montreal	38,896
	Whale Cove	"	<u>59,800</u>
			5,743,090
			2,871
"Federal Pioneer"	Montreal	Igloodik	1,705,548
"	"	Hall Beach	711,346
"	"	Dew Line Sites	1,382,174
"	"	Pangnirtung	1,727,649
"	"	Repulse Bay	953,319
"	"	Lake Harbour	1,189,098
"	"	Broughton Island	111,342
"	"	Cape Christian	62,472
"	"	Inugsuin Fiord	71,436
"	"	Longstaff Bluff	258,050
"	"	Nottingham Island	9,895
"	"	Padloping Island	119,784
"	"	Convoy "O"	1,566,934
	Lake Harbour	Montreal	39,701
	Hall Beach	"	162,047
	Pangnirtung	"	11,780
	Inugsuin Fiord	"	1,500
	Dye Main	"	11,200
	" "	"	3,240
	Foxe Main	"	13,391
	Igloodik	"	77,375
	Broughton Island	"	2,000
	Repulse Bay	"	<u>50,098</u>
			10,241,379
			5,121
"Sir John Crosbie"	Montreal	Alert	723,691
"	"	Hopedale	116,305
"	"	Goose Bay	247
"	"	Pacer Pine	139,750
	Goose Bay	Resolution Island	72,332
" "	" "	Sugluk	194,881
" "	" "	Hopedale	59,654
" "	" "	Saglek	23,100
	Northern Sites	Montreal	<u>139,609</u>
			1,469,569
			735
"Edouard J. Simard"	Montreal	Resolute	<u>13,734,962</u>
			13,734,962
			6,867

VESSEL	FROM	TO	WEIGHT (LBS.)	
"Jos Simard"	Montreal	Dew Line Sites	13,872,723	
	Churchill	Bunker Fuel	<u>3,742,000</u>	17,614,723
				8,807
"Maplebranch"	Montreal	Dew Line Sites	2,986,789	
	"	Bunker Fuel	3,696,000	
	Churchill	W. Hudson Bay	9,630,900	
	"	Repulse Bay	1,148,000	
	"	Hall Beach	1,148,000	
	"	Pangnirtung	1,886,000	
	"	Broughton Island	574,000	
	"	Igloolik	2,132,000	
		Coral Harbour	<u>3,300,566</u>	26,502,255
				13,251
"Sea Transport"	Goose Bay	Pacer Pine Sites	<u>25,456,000</u>	25,456,000
				12,728
"Cacouna"	Montreal	Frobisher Bay	365,460	
	Frobisher Bay	Montreal	<u>26,637</u>	392,097
				196
"Andrew C. Crosbie"	Montreal	Fort Chimo	47,000	
	"	Port Harrison	131,857	
	"	Payne Bay	28,198	
	"	Povungnituk	62,607	
	"	Great Whale River	30,430	
	Fort Chimo	Koartak	300	
	" "	Port Harrison	5,650	
	Povungnituk	Churchill	<u>250</u>	306,292
				153
"P.M. Crosbie"	Montreal	Wakeham Bay	3,800	
	"	Payne Bay	80,803	
	"	Fort Chimo	5,695	
	Payne Bay	Montreal	975	
	Fort Chimo	"	<u>8,150</u>	99,423
				50
"Blue Peter"	Montreal	Frobisher	<u>291,261</u>	291,261
				146

VESSEL	FROM	TO	WEIGHT (LBS.)	
"C.O. Omer"	Montreal	Port Burwell	534,061	
	"	Fort Chimo	456,019	
	"	George River	189,608	
				1,179,688
				590
"Eva"	Montreal	Coral Harbour	<u>70,809</u>	70,809
				35
Fort Ramezay	Montreal	Baker Lake	34,420	
	"	Fort Chimo	203,316	
	"	Port Burwell	53,800	
	Baker Lake	Montreal	<u>26,205</u>	
				317,741
				159
"Inland"	Montreal	Baker Lake	1,081,900	
	Baker Lake	Montreal	188,615	
	Nottingham Is.	"	<u>75,040</u>	
				1,345,555
				673
"Sonia D"	Montreal	Baker Lake	125,015	
	"	Coral Harbour	231,078	
	Coral Harbour	Montreal	<u>139,840</u>	
				495,933
				248
"St. Foy"	Montreal	Baker Lake	<u>707,212</u>	
				707,212
				353
"Topsail Star"	Montreal	Koartak	25	
		Lake Harbour	7,530	
		Ivugivik	<u>955</u>	
				16,510
				8
Hudson Bay Co.	Montreal	Northq	2,000	
	Moosonee	Paint Mills	182,710	
	"	East Main	17,047	
	"	Ruperts House	28,879	
	"	Fort George	10,372	
	"	Winisk	10,750	
	"	Fort Severn	20,000	
	"	Attawapistat	345	
	"	Fort Albany	<u>4,455</u>	

VESSEL	FROM	TO	WEIGHT (LBS.)	
Moosonee		Great Whale	1,260	
"		Belcher Islands	719	
"		Port Harrison	178	
			<hr/>	276,715
				138
Churchill		Baker Lake	49,584	
"		Eskimo Point	140	
"		Rankin Inlet	998	
"		Cape Dorset	60	
"		Lake Harbour	56	
			<hr/>	50,838
				25
Eskimo Point	Churchill		2,780	
Belcher Islands	Great Whale		450	
Frobisher Bay	Pond Inlet		495	
" "	Pangnirtung		5,049	
Arctic Bay	Pond Inlet		10,000	
Great Whale	Moosonee		1,350	
Paint Hills	"		12,680	
Fort George	"		1,000	
Pond Inlet	Montreal		5,205	
			<hr/>	39,009
				20
Recapitulation				
Cargo Handled			tons	
5 MSVs			22,585.0	
6 Icebreakers			3,602.4	
11 Tonnage Basis			2,794.5	
8 Chartered			63,267.6	
			92,249.5	
Western Arctic (Govt. Account)			5,455.1	
Goose Bay (Cargo Operations)			14,501.5	
	Grand Total:		112,206.1	

Department of Transport

METEOROLOGICAL BRANCH

Responsibilities: Provision of meteorological facilities and services to meet approved requirements; research necessary to support these services and to increase understanding of the weather and climate of northern Canada; obtaining of meteorological reports from ships in northern waters; ice reconnaissance; the provision of weather forecasting and weather advisory service; ice forecasting and ice advisory service for the navigable waters of the north. Operation of thirteen upper air stations in the north and, jointly with the United States Weather Bureau, operation of the Joint Arctic Weather Stations in the Queen Elizabeth Islands at Resolute, Alert, Eureka, Isachsen, and Mould Bay, including maintenance and development of the supporting airstrips at the last four of these stations, and operation of telecommunications facilities at these four stations in support of the meteorological program.

Long-term Plans

To provide more complete meteorological and related scientific information in the north, necessitating an expanded network of surface weather observing stations and improved equipment for upper air observations to higher levels; to provide forecasting services as needed for expanding activities in the north; to provide more married living accommodations at several locations in order to encourage more experienced personnel to serve at these stations; to operate seismic vaults for the Department of Energy, Mines & Resources at a few locations, and to undertake a program of ozone, water vapour, and radiation observations to high levels in the atmosphere at certain stations.

Review of 1968 Operations

The synoptic and aviation weather reporting network north of 60°N, which includes the Joint Arctic Weather Stations and the DEW Line Stations was increased by one to 56 stations, the new station being the contract weather station at Beaver Creek, Y.T. In addition a quantity of meteorological equipment was loaned to the Polar Continental Shelf Project for detailed weather observations at four locations on Meighen Island in support of a three-year study of meteorological factors affecting the Meighen Island icecap.

The snow survey network was increased by one to 25 stations. Six stations to continued to take radioactive fall-out samples. The nocticulent cloud observing network remained constant at 17 stations and the visual auroral programme continued at 16 stations. Networks for observing other parameters were as follows: autographic rain record – 5 stations, an increase of one; sunshine – 17 stations, an increase of 5; soil temperature – 3 stations; evaporation – 5 stations; ozone – 1 station; and radiation – 5 stations.

Approximately 77% of the surface stations north of 60°N were visited by meteorological inspectors at least once in 1968.

All the upper air stations maintained their full programme of two rawinsonde ascents per day sending instruments to heights averaging over 90,000 ft. to measure and transmit temperature, pressure, and relative humidity data throughout the ascents. These instruments were also tracked to determine the upper winds at the various levels. Significant progress was made in the effort to achieve higher levels in upper air and upper wind observations.

Work was commenced on a new upper air station at Cambridge Bay which will replace the present upper air station at Coppermine. Some further progress was made to resite the station at Clyde River. The personnel at Coppermine and Frobisher are carrying out a programme of seismological observations for the Department of Energy, Mines and Resources in addition to the regular upper air observations. A seismological vault was completed at Inuvik in the fall of 1968 and seismic observations are expected to commence by the end of February 1969.

The Arctic Weather Office at Edmonton provided forecasts for various activities in the Arctic. Forecasts were also provided for the Yukon, Baffin Island, and the southern part of the Northwest Territories by Weather Offices at Whitehorse, Winnipeg, Goose Bay and Frobisher.

The High Level Forecast Centre in Montreal has now become a part of Central Analysis Office which latter routinely issued forecasts for high altitude aviation for areas extending from the Canada-U.S. border to the North Pole and distribution of these forecasts was made throughout Canada and internationally by facsimile.

The Ice Central in Halifax issued seasonal ice outlooks, thirty-day ice forecasts, and short-range ice forecasts for Arctic and sub-Arctic waters. A Field Ice Office was operated at Frobisher from mid-July to early September to provide ice information for the Hudson Bay shipping route, Foxe Basin and the Eastern Arctic. A Field Ice Forecast Office was operated at Edmonton from mid-July to early October to provide ice forecasts for Arctic waters.

Aerial ice reconnaissance over the Canadian Arctic and sub-Arctic commenced on July 3 and was terminated on December 1. A total of 135 flights amounting to 1,121 hours was carried out during this period. Most flying was carried out during the month of August with 42 flights, a total of 399 hours of flying. In general, ice was very light this year particularly in the western Arctic and freeze-up was much delayed, therefore, it was necessary to carry out one freeze-up flight over Hudson Bay and eastern Arctic in mid-December.

In addition to aerial ice reconnaissance, ice observers carried out duties, a total of 727 days, on eight Coast Guard Ice Breakers and participated in 112 helicopter ice reconnaissance flights.

Thirty-seven selected stations provided shore station ice reports during the navigation season and twenty-seven sites provided weekly ice thickness reports throughout the winter.

Fifty-three stations in the Northwest Territories and the Yukon participated in the continuing programs to obtain the dates of break-up and freeze of rivers, lakes and salt water bodies of water.

The Arctic weather stations at Resolute, Alert, Eureka, Isachsen and Mould Bay, N.W.T. continued to be operated jointly by the Canadian Meteorological Branch and the United States Weather Bureau. In addition to the regular surface sunoptic and upper air observations the following programs are also carried out:

- (a) Hourly surface weather, total ozone and ozonesonde observations, soil temperature, noctilucent clouds, evaporation rates, radioactive fallout — all at Resolute only.
- (b) Solar and net radiation — Resolute, Mould Bay and Alert, plus sky and reflected radiation at Resolute.
- (c) Auroral observations — Resolute, Alert, Isachsen, Mould Bay.
- (d) Sunshine record, snow survey, and growth of sea ice — all stations.
- (e) At Alert, the Meteorological Technicians operate the superneutron monitor for Atomic Energy of Canada. Modifications were made to all the electrolytic hydrogen generators to conform fully to CSA standards.

A tower was erected at the airstrip at Resolute and the U2A anemometer relocated from the operations building to the tower. A similar transfer of U2A wind detector was made at Isachsen. All JAWS now have control tower type anemometers located at the airstrips.

In a program of improving communications, radio teletype was installed at Eureka and put into operation by mid-August. Single side board and AM radio equipment was installed at all JAWS for communication with research and commercial agencies operating in the Queen Elizabeth Islands.

Materials for a 14-room barracks and a new powerhouse for Mould Bay were purchased and forwarded to Mould Bay for erection summer 1969.

As part of an improvement program a fresh water supply at all stations, a dam has been constructed at Mould Bay. Capacity is expected to be about 150,000 gallons. In a continuing program to lengthen the airstrip at Isachsen to 5,000 ft. or better, filling of the gully at north-east end is approximately 80% complete.

Commercial airlift was used in support of Isachsen, Eureka and Mould Bay throughout 1968. Supporting airlift for Alert was provided by Canadian forces.

Plans for 1969

The new upper air station at Cambridge Bay will be completed by the fall of 1969 and the transfer of upper air observations from Coppermine to Cambridge Bay will be effected as soon as the new GMD rawinsonde equipment together with the new electrolytic hydrogen generator can be installed. At Inuvik it is planned to improve the upper air observing program by constructing an addition to the present rawinsonde tower and installing a GMD rawinsonde set.

At the Joint Arctic Weather Stations it is planned to improve the communication facilities by the installation of radio teletypes at Alert, Isachsen and Mould Bay. This

will be followed by a gradual phasing out of the radio operators who will be replaced by Meteorological Technicians.

Other planned improvements for 1969 include:

Lowering of 1 cm. soil temperature detector to the 5 cm. level at Resolute.

Completion of barracks and powerhouse construction at Mould Bay.

Installation of new electrical generators at Mould Bay and Eureka.

Plans for ice reconnaissance for 1969 are basically similar to those of 1968. Studies are in progress to determine the feasibility of facsimile transmission of ice data from aircraft direct to the respective ice breakers and to determine more effective radar for ice observations.

**UNEMPLOYMENT INSURANCE
COMMISSION**

UNEMPLOYMENT INSURANCE COMMISSION

Responsibilities: Administration of the Unemployment Insurance Act through the Commission's local office in Prince George which handles the Yukon Territory, and its local office in Edmonton which handles the North-West Territories.

Long-Term Plans

At the present time, there is no advance information of a classified nature to submit with respect to the Commission's long-term planning, as it pertains to our activities in the North.

Review of 1968 Operations

The Commission does not operate a local office in the Yukon or North-West Territories. Agents appointed for the purpose of taking applications for benefit are located at:

Whitehorse, Y.T.
Dawson City, Y.T.
Yellowknife, N.W.T.
Hay River, N.W.T.
Inuvik, N.W.T.
Fort Smyth, N.W.T.
Mayo, Y.T.

In September 1968, the Commission has revoked Regulation 76 (h) which included in excepted employment, any person employed North of the 60th parallel of latitude, whose livelihood was not ordinarily derived from insurable employment.

Plans for 1969

The continued normal operation of the unemployment insurance service already in existence and improvement of its service. Appointments of agents wherever necessary.

Employees

None.

**GOVERNMENT OF THE
NORTHWEST TERRITORIES**

GOVERNMENT OF THE NORTHWEST TERRITORIES

Responsibilities: To exercise local government jurisdiction within the Northwest Territories, exclusive of control over natural resources (except game which is a Territorial resource); and the takeover of functions now exercised by the Department of Indian Affairs and Northern Development.

Long Term Plans

To develop the Northwest Territories through legislation and administration geared to the special social and economic needs of the north, and to involve all northern residents in the processes of government and social development.

Review of 1968 Operations

The process continued of transferring federal functions to the Government of the Northwest Territories. The territorial organizational structure was developed with particular emphasis on personnel, financial and control services. All departmental heads were appointed and were organizing their departments. A total of approximately 330 staff were on Territorial strength by December 1968.

On April 1, 1968, the Territorial Government assumed complete responsibility for the administration of tourism in the Mackenzie District and of game throughout the whole of the Northwest Territories.

In July the Mackenzie District Headquarters Personnel, Material and Supply and Finance functions were transferred to the Territorial Government.

On September 3, the maintenance of the Mackenzie Highway System was contracted to the Territorial Government and in October the Mackenzie District Engineering Staff was transferred.

Steps were taken to give effect to the transfer on January 1, 1969, of the remainder of the federal Industrial Development Program. The Yellowknife Regional Office was eliminated as of July 1968 and responsibility for administering this region was placed under the jurisdiction of the Fort Smith Regional Office.

The 36th and 37th Sessions of the Territorial Council were held from February 7 to 27 and June 27 to July 9 respectively. Legislation passed at the first of these Sessions included a new Companies Ordinance and amendments to the following ordinances – Game; Liquor; Public Service; Seizures; Workmen's Compensation.

New legislation passed at the second Session included the Perpetuities Ordinance and the Vocational Rehabilitation of Disabled Persons Agreement Ordinance. Further amendments were made to the following Ordinances – Companies; Evidence; Game; Housing Development; Interpretation; Intestate Succession; Jury; Liquor; Low Cost Housing; Municipal; Northwest Territories Housing; Travel and Outdoor Recreation; and Vehicles.

A commission of inquiry was established to look into all aspects of control and use of liquor in the Territories.

Plans for 1969

Completion of transfer of district office staff from Fort Smith to Yellowknife and to build up the Territorial public service as housing and office accommodation becomes available.

Takeover of Educational and Welfare Programs.

Preparation for takeover in 1970, of I.A.N.D. functions in the Eastern Arctic.

Planning for the observance of the Northwest Territories Centennial in 1970.

GOVERNMENT OF THE YUKON TERRITORY

Council of the Yukon Territory

Responsibilities: To exercise legislative powers comparable to those of a provincial legislature.

Administration of the Yukon Territory

Responsibilities: To administer the Yukon Territory in accordance with the Yukon Act and other Federal laws applicable thereto, and the Ordinances of the Yukon Territory.

Review of Council Operations

The Council was called for four sessions. The first was from January 22nd to January 23rd, the second from March 4th to April 4th, the third from July 4th to July 5th and the fourth was from November 12th to December 9th.

During the First Session, an Ordinance to amend the Fuel Oil Tax Ordinance, and an Ordinance to amend the Liquor Ordinance, and an Ordinance to amend the Motor Vehicle Ordinance, were passed. These amendments provided for an increased tax base in the Territory.

During the Second Session, 12 Ordinances were passed, the most important of these being the Ordinance to provide for Labour Standards in the Yukon Territory.

The 1968 Third Session was called for the approval of the Anvil agreement.

At the Fourth Session 24 Ordinances were passed, among them the Condominium Ordinance, a new Fuel Oil Tax Ordinance, a Historical Sites and Monuments Ordinance, and a new Hotels and Tourist Establishments Ordinance.

The Territorial Council visited Mayo, Elsa, Dawson, Clinton Creek and Anvil, accompanied by the Commissioner and Department Heads, on April 5, 6, 7 and 8, 1968.

Territorial Secretary & Registrar General

Responsibilities: The Territorial Secretary holds appointments as the Registrar General for:

- (a) Vital Statistics
- (b) Joint Stock Companies
- (c) Corporation Securities
- (d) Societies
- (e) Co-operative Associations
- (g) Motor Vehicles.

The Territorial Secretary upholds the duties of Registration Clerk, Clerk of the Council, Queen's Printer, Labour Provisions Officer, Workmen's Compensation Officer, directly supervises the office of the Public Administrator and is responsible for the Revision and Consolidation of Ordinances.

Review of 1968 Operations

1. Under the Motor Vehicles Ordinance, 11,458 licences, certificates, registrations etc. were issued.
2. Under the Business Licence Ordinance and Insurance Ordinance, 544 licences were issued.
3. Under the Vital Statistics Ordinance, 380 Births, 93 Deaths and 170 Marriages were recorded.
4. Under the Bills of Sale Ordinance, Conditional Sales Ordinance, Assignment of Book Debts Ordinance, Garageman's Lien Ordinance and Partnership Ordinance, 2,632 documents were registered.
5. Under the Companies Ordinance, 47 Companies were new Yukon Incorporations and 148 were registered as extra-territorial Companies.
6. Under the Societies Ordinance, 6 new Societies were incorporated.
7. The Public Administrator opened estate files for 35 deceased persons, 10 insane persons and 5 minors; a total of 50 new files.
8. Under the Workmen's Compensation Ordinance there were 1,099 accidents during the calendar year 1968, an increase of 340 over the same period last year. The new reporting procedure initiated January 1st, 1968, has proven successful in that the waiting time for compensation payments has been reduced from an average of 5 to 2 weeks.

Legal Adviser

The Legal Adviser provides legal advice and services to the Commissioner, Territorial Council and other organs of government as required.

The drafting of legislation is now almost entirely carried on in the Territory but the services of the Drafting Section of the Department of Justice are still available and made use of as the need arises.

Territorial Treasurer & Collector of Taxes

Responsibilities: Management of the Yukon Consolidated Revenue Fund and supervision, control and direction of all matters relating to the financial affairs of the Territory.

Long-term Plans:

1. Electronic data processing.
2. Establishment of a statistical section to provide data as required, to assess the coverage of existing statistical surveys, to assist in implementing new surveys and to advise local agencies in compiling data.
3. Economic analysis of the Territorial economy.

Operations:

The current two-year Federal-Territorial Financial Relation Agreement is due for expiry on March 31st, 1969. It is estimated that transactions during the life of this Agreement will result in an overall cash surplus of \$468,340.30. Negotiations are under way for a one-year extension of the current Agreement basically on the lines recommended by the Report of the Inter-Departmental Committee on Federal-Territorial Financial Relations for the period 1967-72. The figure of \$468,340.30 comprises:—

Operation & Maintenance	\$677,808.30
Project & Loan Capital	(104,499.00)
Loan Amortization	(104,969.00)
	<hr/>
	\$468,340.30

Operation and Maintenance

The operating deficit grants to be received from the Federal Government for 1967/69 amount to \$7,707,603.16, and the actual deficit for 1967/68 was \$3,378,047.65. This means that \$4,329,555.51 is available to meet the operating deficit of 1968/69. Offsetting Main and Supplementary Estimates expenditure by anticipated lapsing balances produces an estimated operating deficit for 1968/69 of \$3,651,747.21. This means that on March 31, 1969 a surplus of \$677,808.30 is estimated for operation and maintenance transactions during 1967/69.

Project and Loan Capital

Provision for capital for 1967/69 in the agreement amounts to \$7,780,064. of which only \$2,071,634.00 was made use of during 1967/68. Capital funds available for 1968/69 therefore amount to \$5,708,430.00. Main and supplementary estimates expenditure offset by estimated lapsing balances indicate funds required amounting to \$3,910,504.00. This means that capital monies provided under the agreement but not spent by March 31, 1969 are expected to amount to \$1,797,926.00. However, these monies have been earmarked for expenditure on 1969/70 on certain projects which will not be completed during 1968/69. These projects are five (5) in number and include F.H. Collins High School, Whitehorse, the proposed Senior Citizens Home, Whitehorse, the proposed Juvenile Detention Home, Whitehorse, the proposed new Cottage Hospital for Dawson City and Fire Fighting Equipment. It has been estimated that these five (5) projects will require \$1,902,425.00 to complete them and this means that we are looking at a short fall in capital of \$104,499.00.

Loan Amortization

This section is concerned largely with the repayment of Federal Government loans to the Territory for Project Capital purposes. The repayment of such loans is made with monies granted to the Territorial Government for that purpose. 1968/69 will, it is estimated, result in a deficit of \$104,969.00 which should be considered offset by proceeds from sale of serviced building lots taken into revenue through Operation and Maintenance.

General

To summarize, therefore, the position seems to be that on March 31st, 1969 transactions for the two years covered by our current fiscal agreement will have resulted in an estimated overall cash surplus of approximately \$2,370,765.30, but against that must be set the commitment of \$1,902,425.00 for F.H. Collins School etc. This means that perhaps the overall cash surplus should be stated as \$468,340.30. This surplus may well turn out to be greater but whatever it is the amount will serve to increase the Territory's working capital.

Yukon Hospital Insurance Services

- Responsibilities:
1. Administration of the Yukon Hospital Insurance Services programme. Briefly this provides for the following services:
In-patient benefits — standard ward care in an approved hospital either within or without the Territory at the approved per diem rate for the hospital, except in the case of hospitals outside of Canada when a maximum of \$40 (Canadian) per day will be paid.
Out-patient benefits — emergency out-patient treatment if given as a result of an accident and administered within 24 hours of that accident. The service will absorb a charge for such treatment not exceeding \$6.00
 2. Administration of Territorial Hospitals at Mayo and Dawson City.

Long-term Plans:

1. Introduction of Medicare.
2. Take-over and administration of Whitehorse General Hospital.

Review of 1968:

An increase in the per diem rate payable in respect of hospitals outside of Canada from \$25. to \$40. was made during the year. This reflected the current increase in per diem rates being charged on a nationwide basis within Canada. The gross expenditure on Yukon Hospital Insurance Services totalled \$823,055.00 as under:

In-patient services	\$796,024.00
Out-patient services	9,512.00
Administration	17,519.00
	<hr/>
	\$823,055.00

Recoveries from the Department of National Health & Welfare, Out-patients and the Department of Indian Affairs have been estimated at \$539,923.47. resulting in a net expenditure of \$283,131.53 for the year under review.

Details of services provided during 1968 are:

	Within Territory	Outside Territory	TOTAL
A & C Patient Days	16,167	4,968	21,135
N.B. Patient Days	1,917	218	2,135
Out-Patient Treats.	1,582	4	1,586

Plans for 1969:

It is proposed to remove the 24 hour treatment restriction from present out-patient arrangements and provide follow-up treatment.

Engineering & Municipal Affairs

Responsibilities: To construct and maintain Territorial Buildings, Roads and other Public Works.

Long Term Plans:

To improve existing roads to better geometric standards. To undertake surface stabilization on Trunk Highways. To construct buildings on behalf of other Territorial Government Departments.

Review of 1968:

During 1968 maintenance of roads in the Yukon Territory, with the exclusion of the Alaska Highway, cost \$2,005,000.00 Mileage maintained was 1,650.

Road construction was undertaken on the Whitehorse-Keno Road between Mile 0 and 30 and the Canol Road was rehabilitated between Ross River and Dragon Lake, a distance of 60 miles. Other miscellaneous road and bridge construction was undertaken at various locations throughout the Territory. The cost of the foregoing items was approximately \$1,356,000.00. Building construction was undertaken, the value of which was approximately \$1,980,000.00.

164 Territorially owned buildings were maintained together with 101 buildings for the Department of Indian Affairs and Northern Development.

Plans for 1969:

During 1969 reconstruction will continue between Mile 52 and 102 of the Whitehorse Keno Road. Surface stabilization will be carried out between Whitehorse and Carmacks (72 miles). A 3-year reconstruction programme will commence on the Stewart Crossing Dawson Road. The road rehabilitation of the Canol Road will continue towards the Northwest Territories boundaries. Some Territorial roads will be upgraded. The estimated value of the foregoing will be \$2,562,000.00.

Water and Sewer Systems in Riverdale and Porter Creek will be expanded at an estimated cost of \$705,000.00. Various Territory Subdivisions will be expanded to take care of the demand for building lots throughout the Territory.

The building programme for other Territorial Government Departments consisting of schools, Juvenile Training Home, Staff Accommodation etc. will be \$3,323,000.00, approximately. It is expected that the townsite of Faro will be complete in all respects in October, 1969.

Municipal Affairs Branch

- Responsibilities:
- a) Provide municipal services in all unorganized communities in the Territory
 - b) Guide and assist unorganized communities in becoming an organized Municipality.
 - c) Maintain an inspection service for and provide assistance and advice to Municipalities in the Territory.

Long-term Plans

Formulate and establish a policy on the development of Local Government which will meet the general needs of the people in the whole of the Territory and the special needs of its citizens in specific areas of the Territory.

Review of 1968:

Early in the year the Mayo Local Improvement District was established. In the Fall of 1968 the Territorial Assessor, the Fire Marshall and the Municipal Inspector were appointed while at the Fall Session of the Council approval was given to establish Municipal Affairs as a separate Department.

Plans for 1969:

The Department of Municipal Affairs will be officially established with the appointment of its Director and it is hoped that this appointment will be made early in April.

The formation of more Local Improvement Districts is anticipated with the Haines Junction Local Improvement District to be established effective April 1, 1969.

With the development of the Faro Townsite additional administrative responsibilities will be transferred to the Department to ensure the proper Municipal development of this new community.

In 1969 the Department will be dealing with the following four important subjects:

- a) Revision of the Municipal Ordinance.
- b) Study of the financial relationship between the Territorial Government and the Municipal institutions.
- c) Revision and updating of the Whitehorse Metropolitan Plan.
- d) Proposed boundary extension, City of Whitehorse.

In addition to the above, the Department will have to come to grips with questions on taxation for municipal services and the equalization of the cost for water and sewer services in the Yukon Territory.

Assessment Section:

Responsibilities: The assessment of all property liable to taxation by the Territorial Government.

Long-term Plans:

The establishment of an equalized assessment throughout the Territory.

Review of 1968:

The office of Territorial Tax Assessor was created in August, 1968. The annual assessment of Territorial property was completed.

Plans for 1969:

A general assessment of the Territory will be carried out during 1969. The Alberta Government has agreed to provide the necessary assistance to the Territorial Assessor in order that this project may be completed by September 1st. At the same time all Federal and Territorial land and buildings will be assessed in order that a separate assessment roll of all property exempt from taxation may be created.

Fire Marshall Office

Responsibilities: To enforce the Ordinances of the Yukon Territory namely an Ordinance respecting the Prevention of Fire enacted in the Fifth Session 1962, and assented to on December 3, 1962.

Long-term Plans:

To raise the skills, techniques and knowledge necessary to the saving of life and property with regards to the Volunteer and full-time Fire Departments within the Yukon Territory. This will include close liaison with the other offices of the Department of Municipal Affairs namely Electrical, Housing and also the Department of Engineering of the Yukon Territorial Government, with a view to implementing the National Building Code Standards, and the National Fire Prevention Code Standards throughout the Territory.

Review of 1968:

The office of the Yukon Territorial Fire Marshal officially came into being on the 27th September 1968. It having previously been administered by the Fire Marshal of the Northwest Territories. Creation of the Office within the Territory has permitted easier access to related problems which were encountered in the field of Fire Prevention and Fire combat, which has hastened solutions necessary to the implementation of the various Fire Safety Codes. Since the formation of the Fire Marshal's office, the present incumbent has been in contact with the various Fire Chiefs and officials responsible for administering the Fire Safety Programs in the

Territory so that the ground-work has been prepared towards creating an effective Fire Force within the Yukon.

Game Department

This Branch is responsible for the administration of the Game Ordinance, Fur Export Tax Ordinance and the Brands Ordinance. This includes the issuing of all licences and permits as well as inspection of Outfitters equipment under actual working conditions in the field.

All trapline registrations are handled by this Branch and this includes the investigating and eventual disposition of disputes.

A predator control program on a small scale is also handled by this Branch. Poison baits are used for this purpose and are placed out in a manner and location to prevent damage to valuable furbearers. Wolves, coyotes and wolverine are taken on such baits.

It is hoped to conduct a thorough Game census throughout the Territory and it is hoped this project will start this year.

During 1968 the usual investigations of infractions were carried out by this Branch with the R.C.M. Police assisting in most cases.

With the population increase it appears that the work of this Branch has increased considerably, and the addition of one man to our staff has helped a great deal. It is expected that further addition to our staff will be necessary if freshwater fisheries responsibility is handed over to the Territory, and according to information at hand this could happen momentarily.

During the 1968 hunting season our 22 registered big game outfitters handled 285 visiting hunters. This was a noticeable increase over 1967. This resulted in approximately \$384,085.00 being paid to outfitters and guides in the Territory for their services.

At this time our Branch consists of four permanent employees with provisions available to employ casual labour when required.

Department of Travel & Publicity

Responsibilities To increase the value of the travel industry as an economic base in the Yukon Territory.

Long-term Plans:

To encourage, assist and co-ordinate the development and use of recreation resources, historic and tourist attractions, to conduct travel surveys to assist the growth and potential growth of tourism; to plan and conduct publicity and promotion campaigns to attract visitors and to inform the general public about Canada's Yukon.

Review of 1968

In addition to four Information Centres operated in the Yukon (at Watson Lake, Haines Junction, Beaver Creek and Dawson City) three seasonal Information Centres were opened in Northern B.C. at strategic interception points. These were located at Dawson Creek, Prince George and Prince Rupert. The results of this experiment were successful and the operation will be repeated in 1969.

The expansion of our operation into Northern B.C. provided an opportunity to discuss joint promotion campaigns with tourist officials there. A meeting was held in Whitehorse in October 1968 where delegates from B.C. Alaska and the Yukon discussed and approved the concept of a "common market" for travel to include all three areas. Future meetings will develop the plans for this campaign.

Twelve large signboards were constructed to identify points of interest bringing the total to thirty-four signs of this type erected in a continuing program.

An Information Officer was appointed in November 1968 to fill an important gap in our organizational structure.

Forty-six selected Travel Agents were assisted during two familiarization tours of Alaska and the Yukon and "briefing" seminars were conducted by the Department during their overnight visit to Whitehorse. Numerous travel writers and photographers were assisted during their visits to the Yukon with the results appearing in many publications on North America.

Yukon Bud Fisher completed another annual winter tour of promotion through many parts of the U.S. Valuable assistance was received from Air Canada and the Canadian Government Travel Bureau during the tour which extended from December 1967 to April 1968.

Two new Ordinances were passed. (1) An ordinance to Establish the Historic Sites & Monuments Board of the Yukon Territory, and (2) The Hotel and Tourist Establishments Ordinance. Two meetings were held with each of the groups involved (1) the Historic Sites Board and (2) the Tourist Advisory Council.

Tourism reached a new high in 1968. More than 118,000 visitors spent \$7,681,120.00. This represents an increase of 18% over 1967 and an increase of 11% over the previous record-breaking year of 1966.

Plans for 1969

Three surveys are planned for the coming year.

- (1) Bus Tours Survey – to establish the identity of all tour operators who bring clients to the Yukon; the number of "bus tour nights" booked into Whitehorse hotels and motels; the total number of bus tour clients involved and the approximate dollar value of this type of business.
- (2) A "Conversion" Survey to establish the percentage of enquirers from each market area who actually visit the Yukon.

- (3) A "Motivation" Survey establish the incentives which influence our tourists to visit the Territory.

An upgrading of services provided at the camp-grounds is presently under discussion.

Yukon Regional Library

Responsibilities: Operation of a regional library system designed to give public library service to all parts of the Territory and aid school library service in Territorial Schools.

Long-term Plans

To work towards providing, as closely as possible under Territorial conditions, public and school library service at the level of accepted standards of library service.

Review of 1968

With a stock of approximately 47,000 catalogued books the library served 57 outlets in the various Yukon communities. 23,450 books were shipped to these outlets on a rotating basis, and 4,820 new books and added copies were catalogued. The members of the Whitehorse Branch Library borrowed 56,190 books during the year. The Film Library distributed 5,055 16mm films throughout the Territory and these films were viewed by a total audience of 135,360 people.

Plans for 1969

Plans for the provision of paid staff, rather than volunteers, in communities having branch libraries had to be postponed in 1968. This program will now begin in 1969. In addition a program of training Branch Library Supervisors in the full utilization of all resources will be initiated. There will be major changes in the ordering and cataloguing routines involved with the centralized processing of books for all school libraries in the Territory. Certain clerical ordering operations will be eliminated to make better use of preprocessed book wholesaler's data processing equipment. The new community of Faro will begin receiving public and school library service.

Department of Education

- Responsibilities:
- 1) To provide elementary and secondary educational facilities for the students of the Yukon Territory. Yukon elementary and secondary schools are operated in accordance with the provisions of the Yukon Schools Ordinance.
 - 2) To provide technical and vocational training to students who desire to work in the expanding trades of the Yukon Territory.
 - 3) To provide technical and re-training and re-education for the present Yukon labour force.

Long-term Plans:

Improvement and expansion of the present program and present facilities to meet the needs of an expanding Yukon populace.

Review of 1968

Elementary and Secondary Schools.

In September 1968 Yukon schools enrolled 3580 students: in December 1968 the enrollment had increased to 3746 students. The Department expects student enrollment to continue this increase during the present term and to show another marked increase in September 1969.

The Yukon school system consists of 21 Public and Catholic schools employing 194 teachers. These schools operated a total of 193 school days during the 1968 calendar year. In October the Swift River School, the only one-room school in the Yukon, was closed due to a decrease in enrolment. In September 1968 new schools were opened in Porter Creek and Clinton Creek. The Jack Hulland School in Porter Creek teaching grades one to seven in eight classrooms was overcrowded in September while only two of the four classrooms at Clinton Creek were in use. The two Watson Lake schools, St. Ann's Catholic School and the Watson Lake Elementary Secondary School, were amalgamated to form one school under the name of the public school. This program will operate on a trial basis to the end of 1969-70 school term and the amalgamation will be reviewed at that time.

School program offerings in seven Yukon communities were extended to include kindergarten and grade nine. This program extension has met with overwhelming community acceptance. In some of the schools concerned, the additional students have caused the present facilities to be extended to the limit.

Eighteen community kindergarten classes were instituted in the larger Yukon communities. The Department pays the teacher's salaries and partially equipped these kindergartens while the community organization operating the classes are responsible for the provision of the classroom space.

Expansion of the physical facilities of the F.H. Collins School is progressing with a Vocational Education building under construction. This building will be ready for occupancy in September, 1969. Plans for a twelve room Academic Building on the same site will increase the capacity of this Junior-Senior Secondary School to twelve hundred students.

During the latter part of the year the Department instituted the planning for and production of culturally oriented reading materials. This material will supplement the primary reader "Yukon Fun" that has been used for four years, to assist our native Indian students in learning to read.

With the Yukon schools following the British Columbia school curriculum the following new courses are being taught in our schools: English 7, Social Studies 8, Commerce 10 and Science 8, 9 and 10. These changes reflect the constant change in the curriculum made necessary by society's changing demands on the school.

A major change in the pattern of the Yukon school system was initiated with two of our secondary schools operating on the semester program during the 1968-69 school term. The first semester runs from September to January at which time the students write final exams in the courses studied during that period. The second semester ends with exams during the last week of June. The semester program allows for considerable flexibility in school and student timetables and increased efficiency in use of school teaching staff.

Plans for 1969

The semester program will be introduced into at least two other secondary schools during the 1969-70 term.

An Elementary Oral French program will probably be introduced into the larger elementary schools in the Territory. The program will utilize available audio-visual aids and the oral-aural method of language teaching. This program will begin at the grades five, six and seven level. Where necessary and practicable, the French program of reading and writing the French language will be initiated for those students who presently have some knowledge of this language.

A new ten-room elementary-junior secondary school will be built at the Faro townsite of the Anvil Mining Corporation. At present plans are to teach grades one to ten in this school during the 1969-70 term.

A number of other Yukon schools will have additional classroom space constructed to keep pace with the growing school population. Notable among these will be a Jack Hulland School addition and a modification of the present Carmacks School to make available more classroom space.

Vocational & Technical Training Branch

The training programs and the course graduates have reached a high level of acceptance this past year from the trades and the public in general. A follow-up program implemented this year indicated that 70% of the June graduates were able to find employment in the trade for which they were trained.

Interest in Trade Training showed a 10% increase over the previous year with 249 applications for the September intake and 98 for the February intake being processed. Of these 157 were approved and enrolled in September and 62 in February

Mr. H.J. Bredin was appointed to the position of Principal of the Training Centre and Mr. R.E. Scholes was appointed as Industrial Training Co-ordinator. The impact of these qualified administrators has improved the operation and image of the Department. Three instructors were appointed to fill the vacancies created by resignations and one additional Commercial instructor was appointed to instruct a new general Clerical Course.

A variety of short term updating and upgrading courses were provided at the Training Centre in answer to the needs of various Yukon Industries. Programs of these types will be continued and it is anticipated that the number will increase appreciably in the next fiscal year, making use of local qualified personnel, or where necessary, import of specialists.

Three new courses have been organized and should commence either in mid March or in April, namely, a Basic Miners Course, a series of Transport Driver Training Courses and a Waitress Training Course, all of which have been recommended or accepted by the industry involved.

The Apprentice Training Regulations have been drafted and should be ready for approval and implementation by the end of March. The number of queries received in respect of apprenticeships has been in excess of our original anticipation and indicates a need for implementation which is long overdue. Approval of the Regulations will also instigate the procedures and issue of certificates to qualified trades men in 6 of the designated trades and permit development of certification procedures for the others. Participation from the trades employers and employees on the various Trade Advisory Committees has been most rewarding and shows the interest these developments have created.

The Co-ordinator and the members of the Rehabilitation Services Board have been officially appointed and research is under way to draft the Rehabilitation Services Regulations.

The Adult Education Night School Program continues to increase with courses being presented in three centres in Whitehorse as well as various courses in operation at Watson Lake, Dawson City and Mayo. From the demand for this type of training a large increase in the program is expected for next winters needs. 42 courses were presented this winter with over 447 students enrolled.

Plans for the future include a steady increase of programs for the Mining Industry and modifications of the existing programs to provide for the training of apprentices. As the Territory grows and develops so will the need for training of competent personnel.

Liquor Control

Responsibilities: The Liquor Department controls the importation, retailing and distribution of all alcoholic beverages within the jurisdiction of the Liquor Ordinance,

Long-term Plans

By controlling the licenced outlets, to upgrade the lodging and food establishments in the Territory both for the travelling public and the residents, and also to provide a monetary base for Governmental establishments.

Review of 1968

Operations

The Whitehorse Government Liquor Store was converted to a self-serve store in June, and the warehousing and licensee sales facility was separated from the store operation. This move accommodates the increased retail and licensee sales without an increase in staff and also permits a greater degree in stock-ordering control.

The four stores located in Dawson, Mayo, Haines Junction and Watson Lake continue as two-man or one-man operations encompassing the work of Territorial Agents also.

Sales for the period April 1 to December 31, 1968 amounted to \$2,983,578. as compared to \$2,458,484. for the corresponding period in 1967, an increase of \$525,093.

Plans for 1969

New stores are planned at Watson Lake and Faro Townsite; these are expected to be self-service type stores. We are presently obtaining information on data processing and are hopeful that a program will be established for inventory, stock control. We expect to have Liquor Inspectors appointed during the period. With the increase in sales, in all areas, we are most interested in obtaining additional warehousing either through warehousing of our own or by rented space.

Department of Social Welfare

Responsibilities: The Department of Social Welfare administers a total public welfare program in the Yukon Territory. With the exception of services under the General Assistance Program, the Department provides a full range of social welfare services to all people of the Territory, Indian and White, who are in need of such services. Social Assistance to persons of Indian status is provided by the Yukon Indian Agency of Federal government's Indian Affairs Branch. Social Welfare programs presently administered by the Department are:

- (a) General Assistance
- (b) Categorical Assistance
- (c) Family and Child Welfare Services
- (d) Adult and Juvenile Probation Services
- (e) Alcoholism Services

The Department is also responsible for the administration of a twelve-bed Nursing Home, two Senior Citizens Homes one Children's Group Home, two District Welfare Offices, and a branch office in Whitehorse which accommodates the Social Assistance Division and the Alcoholism Services Services Division. Total staff during 1968 was 45, consisting of:

Professional Staff:

Program Direction & Administration Director
Family & Child Welfare Div. Supervisor 4 Social workers

Probation Service 2 Probation Officers
Social Assistance Div. Supervisor, 1 Social worker
Field Offices 2 Area Social workers
Alcoholism Services Div. 1 Alcoholism Consultant

Administrative, clerical & operating staff:

Departmental Administration 1 Administrative officer
Clerical & stenographic 10- staff

Responsibilities: The Department is responsible for the administration of the (Legislative) following Territorial legislation:

- (a) Social Assistance Ordinance
- (b) Protection of Children Ordinance
- (c) Children of Unmarried Parents Ordinance
- (d) Old Age Assistance & Blind Persons' Allowance Ord.
- (e) Disabled Persons' Allowance Ord.

In addition to these statutory responsibilities, the Director in his official capacity of Superintendent of Child Welfare, has certain defined responsibilities under the Adoption Ordinance and the Federal Juvenile Delinquents Act.

Long-term Plans

In general, the Department plans to continue the development of constructive social welfare programs, to raise standards of service and to continue our planning for the expansion of programs and the development of new services necessary to meet changing conditions and needs.

Specific longterm plans are:

- (a) An expansion of group home and other child care facilities in order to meet the vital need of the variety of resources required for the increasing number of children coming into the protective care of the Department, particularly the specialized facilities that are needed for emotionally disturbed and multi-handicapped children.
- (b) To continue the development of a broad program of services together with the establishment of the necessary facilities designed to meet the needs of our aged people.
- (c) The continuation of a public housing program, established in 1967 and designed to alleviate hardship and suffering in the poverty stricken group, with the purpose of improving their deplorable living conditions and endeavouring to reduce the high incidence of disease and social problems amongst this group of people.
- (d) The development of a fully integrated social welfare program for all residents of the Yukon by means of an extension of the existing Territorial Social Assistance program to registered Indians.

Review of 1968 Operations

During the year a more extensive coverage of the Territory has been provided with the full range of social services having been extended to all areas. A better level of service is now being extended to outlying areas as the result of an increase in field trips by social work staff from the main office in Whitehorse and by Area social workers in Dawson City and Watson Lake. Generally, a good deal of progress has

been made during 1968 in all areas and a high standard of service has been maintained in the administration of the total program.

A greater demand was placed upon services in 1968 than in any other year of operation. The most recent statistical data indicates that the Department provided services in 1,507 cases, involving 2,858 persons, in comparison with the previous year, this is an increase of 352 cases. There was considerable activity in our program of Family and Child Welfare Services which covers a broad field of activity including Family Service, Child Protection, Child Care, Adoptions and Unmarried Parents Service. The total caseload for this program during 1968 was 772, an increase of 148 cases in the previous year. The Child Care Program was an extremely active one and a total of 358 children were in the care of the Department as compared with 307 during the previous 12 months. There were increases also in the number of Family Service and Child Protection cases.

Construction of the first Children's Group Home was completed in June 1968. This is a specialized child-care facility and provides a treatment program in a group-living situation, for 12 adolescent children with behavioural problems. Planning for a new Senior Citizens' Home was finalized and construction of the building was started in October 1968. The new Home will be located in Whitehorse and is designed to provide 23 living units capable of accommodating married couples and single persons. Planning was commenced for the Territory's first Juvenile Training Home and it is anticipated that construction will commence early in 1969. This facility will provide custodial care and training for Juvenile offenders under the age of 16 who are committed by the Juvenile Court under the provision of the Federal Juvenile Delinquents Act. Maximum capacity of the new building is expected to be 25. The first private group home was established in Whitehorse during the year and this provides accommodation and care for family groups of children who are wards of the Department.

During the year in review, new social legislation enacted consisted of the Yukon Territory's first Social Assistance Ordinance which, in addition to providing for the granting of assistance to persons in need and for a variety of other social welfare services, also provides the authority for the signing of an agreement with the Government of Canada under the Canada Assistance Plan. New Regulations under the Social Assistance Ordinance were drafted during the year and it is expected that the Agreement with Canada will be signed early in 1969. An agreement under the Canada Assistance Plan will broaden Federal sharing of costs of assistance to cover costs such as Child Welfare Maintenance and health services, which were not previously shareable under existing shared-cost welfare programs. Work on a completely new Child Welfare Ordinance was completed during 1968 and plans are to have the legislation presented at the 1969 Fall Session of the Legislative Council of the Yukon Territory. The Territorial Department of Social Welfare was accredited by the University of Calgary School of Social Welfare as a field placement agency in April 1968 and two first-year students carried out their field practice in the Yukon under the supervision of the Department.

A proposal by the School of Social Welfare to establish a teaching centre in the Yukon and for the establishment of a staff development program for social workers of the Department is presently under study.

It is planned to review program policies and practices and effect changes or improvements where these are found to be necessary, thereby raising standards of service to a high level with the ultimate objective of developing a positive and effective program of social services for the people of the Yukon. In particular, a careful review and examination of workloads in the District Welfare offices, as well as a study of existing social problems in these areas will be carried out to determine to what extent field staff will have to be strengthened in order to provide adequate coverage and meet anticipated demand for increased social services as the result of the extensive mineral activity and proposed development of new townsites in the areas served by these District offices.

In view of the lack of placement resources and the increased activity in our child-care program, it is planned to develop a variety of resources for children admitted to the Department so that their needs can be adequately met. The establishment of these needed resources will add to the quality and effectiveness of the total Child Welfare Program. Because of the variety of problems involved and the varying age ranges of the children needing specialized settings, planning will be oriented toward the development of Family Group Homes, Group Homes for adolescents in need of a controlled environment because of behavioural problems, and cottage-type facilities for emotionally disturbed and multi-handicapped children. The Department will continue its efforts to encourage private groups experienced in child care to come to the Yukon to establish more child care facilities and ideally, to operate any Government-owned facilities for children. It is hoped that our efforts will be successful and that the pressing need for sufficient and adequate facilities can be met by both government and private groups dedicated to providing for the welfare of children. The Department will also embark upon an extensive foster-home and adoption-home finding program with the view of establishing more placement resources for children in wardship care and finding more adoption homes for the increasing number of children being relinquished for adoption.

Development of existing welfare programs will continue in the light of existing needs and changing socio-economic conditions in the Territory. The total program will be improved and expanded in view of the extent and complexity of conditions and social problems which exist in the far north and because of the need to prevent conditions worsening, to alleviate suffering and hardship and generally to stimulate the development of a healthy social climate and aid in the social development of the Yukon.

DEPARTMENT OF PUBLIC HEALTH

Responsibilities: Provision of a comprehensive Public Health Program to all residents of the Yukon Territory, on a cost shared basis with the Federal Government. This includes the operation of Health Centres throughout the Yukon. Medical and administrative advice is also given to Dawson City and Mayo Hospitals.

Long-term Plans

Continued expansion of Public Health Programs, in line with population increases; advances in Public Health treatment, and health problems which are present.

Review of 1968

Operations:

- (1) Teslin Health Centre opened and staffed
- (2) Watson Lake Doctor's Residence completed for occupancy.
- (3) A review and restructuring of all Public Health Programs was undertaken in 1968. Increased emphasis was placed on tuberculosis control in line with the increasing incidence of tuberculosis. An increasing number of persons were placed on home treatment. This one Public Health Program has occupied an increasing proportion of the Public Health Nurses' schedule.
- (4) Provision of travelling medical clinics to out-lying areas without resident doctors.

Plans for 1969

- (1) The building of a Nursing Station complex in Faro City.
- (2) Provision of a Health Trailer in Beaver Creek.

DEPARTMENT OF CORRECTIONS

Responsibilities: Consist of arranging for the custody, care, treatment and supervision of those people who have appeared before the Territorial Courts of Justice and have been remanded, sentenced to terms of imprisonment up to 2 years less 1 day or placed on Probation. It is also responsible for assuming supervision of those people released on parole from Territorial, Provincial and Federal Institutions or placed on Probation in the Province and transferred to Yukon jurisdiction.

Long term plans

These involve the use of the one medium security institution as a reception centre and clearing house for persons sentenced to terms of imprisonment. Extended use will be made of mobile units to operate in minimum security settings. Such units will be involved in work programs of a nature aimed at performing various projects for general community benefit and in teaching good basic work habits to the inmate participants.

V astly extended use of the Probation Services is envisaged with the emphasis being on supervision and guidance in the community, with the subject being self-supporting, rather than the arbitrary use of incarceration as an easy, yet costly, means to an end.

Review of 1968

Both Correctional Institutions were fully operational in 1968. A total of 516 inmate admissions was recorded, broken down as follows:

Males:	343 Sentenced 87 Remanded
Females:	80 Sentenced 6 Remanded

Work projects performed at the Medium Security Institution included brush clearing, landscaping, erection of a greenhouse and clearing of fire killed forest areas near Whitehorse.

Yukon Mobile Institution were concerned essentially in site clearing and cutting wood for use by Forestry at Territorial camp-grounds.

One project which evoked considerable public interest was the use of an inmate work crew to restore the Chilkoot Trail. This project is expected to take three more years to complete.

Plans for 1969

In addition to furthering the projects started in 1968, experiments will be made in conjunction with the use of the greenhouse, to grow vegetables within the Institution grounds. Inmate labour will be employed in construction of planned

extensions to the Medium Security Institution and restoration of other routes and devices used by gold-rush era pioneers will be undertaken in the Whitehorse area.

Office of Supervisor of Lands

The sale and leasing of Crown Lands have increased this year, many parcels of land being closer to subdivisions although the leasing of lake front property on many lakes in the Yukon has also increased. The total number of transactions for the year 1968 were as follows:

Leases, licences and permits executed	195
Agreements of Sale executed	65
Assignments registered	27
Cancellations effected	39
Surrenders processed	7
Applications for leasing of land accepted	174
Applications for Agreements of Sale accepted	85

Yukon Lands

The demand for lots in the Porter Creek subdivision appeared to be as great as during the year 1967. Greater interest has been shown in the Porter Creek Industrial area rather than MacRae area, and, the demand will increase at the time the roads are made available to the Industrial area at Porter Creek. Considerable interest has been shown for Commercial land both in Porter Creek and MacRae areas. Of the proposed 300 lots to be made available in Porter Creek, I would venture to say a demand for 150 of these will exist at the time they are made available. During the year 1968, 86 lots in the subdivision were sold under Agreement for Sale and monies received from Agreements for Sale, fees, Options and Offers to Purchase and lease rental covering residential, commercial and industrial land in this subdivision was \$67,215.09.

In the Riverdale subdivision, 48 lots were sold, being a definite increase over 1967 and two lots were placed under an Option to Purchase, and of these two lots, one proposed purchaser entered into an Offer to Purchase. The amount received from the sale of land in Riverdale during 1968 was \$122,521.21.

All lots in the Whitehorse Industrial area were leased immediately after they were made available and lease rental and fees received for same totalled \$3,597.99.

The sale of lots in the surrounding subdivisions and particularly Watson Lake doubled during the year, bringing in a total of \$6,397.00 covering 18 lots sold.

Commencing July 22, 1968, Notifications for Title were issued by the Commissioner and by December 31, 1968, \$650.00 was received covering 65 titles.

Total received from Yukon Lands during the year of 1968 was \$277,457.31.

Department of Personnel

This Department is responsible for the administration of the Public Service Ordinance including the activities of recruitment and selection, classification and

pay, employee evaluation and training, and other functions normally associated with a central personnel office.

Long term plans for the Department include the development and co-ordination of a comprehensive training program tied to an effective system of employee evaluation and manpower utilization.

During the past year positions missed during the original classification survey in 1967 were analyzed and allocated to classes of employment within the service.

To simplify the budgetting process and facilitate a program of staff establishment control consolidation of salaries and other related items into one vote was achieved. This office reviewed and recommended changes in rates of pay for roughly 140 classes of employment in the service. The new rates were effective April 1, 1968.

Training opportunities for some 15 management candidates were arranged with such agencies as the Federal Government and the Banff School of Management. In addition, locally co-ordinated courses in defensive driving and winter survival were arranged.

Towards the end of the fiscal period an exit interview program was implemented. During this same period roughly 130 permanent positions were filled.

During the coming year this office anticipates the development of an educational leave program. In addition the entire fringe benefit structure will be reviewed with special consideration given to life and long term disability insurance.

APPENDICES

APPENDIX "A"

REVENUES AND EXPENDITURES IN N.W.T. AND Y.T.

- SOURCES:—
- Treasury Office for Indian Affairs and Northern Development, Department of Finance, Ottawa, obtained the data from the the departments listed.
 - Department of the Treasury, Government of the Northwest Territories, Yellowknife, N.W.T.
 - Department of the Territorial Treasurer, Whitehorse, Y.T.

Revenues and Expenditures in Northwest
Territories and the Yukon Territory
Fiscal Year 1967-68

Department	Northwest Territories		Yukon Territory	
	Revenues	Expenditures	Revenues	Expenditures
Agriculture	6,300.68	41,412.52	7,069.39	68,827.52
Canada Emergency Measures Organization . .	---	11,987.00	---	---
Canada Pension Plan	---	27.22	---	355.59
Centennial Commission	---	197,000.00	---	35,000.00
Chief Electoral Officer	1,200.00	56,584.00	1,000.00	24,976.00
Energy, Mines and Resources	1,988.60	436,664.69	4,533.15	191,040.80
Finance	---	7,510,089.23	---	424,350.75
Fisheries	10,448.00	194,976.00	6.00	27,450.00
Indian Affairs and Northern Development . .	4,430,450.64	44,125,600.39	484,733.20	7,519,821.69
Justice	18,821.45	228,527.59	36,141.20	209,696.64
Manpower and Immigration	---	103,722.49	---	425,857.39
National Defence	---	2,372,013.00	---	1,373,976.00
National Health and Welfare	635,650.61	7,372,529.92	710,789.53	2,677,688.24
National Revenue (excluding Taxation Division)	---	---	586,471.83	256,899.92
Northern Canada Power Commission	4,804,713.00	6,545,729.00	1,268,340.00	1,535,641.00
Post Office	173,985.05	1,367,880.79	194,463.13	1,358,041.89
Public Works	192,000.00	3,775,311.00	321,515.00	9,862,006.00
Royal Canadian Mounted Police	679,528.37	2,494,186.18	153,953.72	834,703.44
Trade and Commerce	1,461.00	1,227.00	1,746.00	1,968.00
Transport	636,523.65	9,434,069.76	128,424.68	1,270,875.06
Veterans Affairs	---	654.70	---	3,003.96
N.W.T. Government	17,173,000.00	14,584,000.00	13,525,463.00	13,923,457.00
Yukon Government				

LEGEND

NORTHERN EMPLOYMENT *

YEAR ROUND ESTABLISHMENT — Personnel who are employed and live in the north throughout the year.

SEASONAL ESTABLISHMENT — Personnel who are hired for seasonal projects in the north.

CASUAL EMPLOYMENT — Personnel who are hired for casual job employment throughout the year in the north.

SKILLED — Includes Building Trades, Equipment Operators, Weather Station Observers, Office Workers, Administrators, Medical Officers, Teachers, etc.

UNSKILLED — Includes Labourers, Stevedores, etc. Where training and experience are not significant requirements.

* Figures quoted in man years

APPENDIX "B"

GOVERNMENT AND AGENCY EMPLOYMENT IN THE NORTH - 1968

DEPARTMENT OR AGENCY	YEAR ROUND ESTABLISHMENT			SEASONAL ESTABLISHMENT			CASUAL EMPLOYMENT		
	Skilled		Unskilled	Skilled		Unskilled	Skilled		Unskilled
	Hired in south for northern service	Hired Locally	Hired Locally	Hired in south for northern service	Hired Locally	Hired Locally	Hired in south for northern service	Hired Locally	Hired Locally
AGRICULTURE	3.		5.			4.			10.
CANADIAN BROADCASTING CORP.	25.	40.							
CANADIAN NATIONAL RAILWAY		15.				60.			
CENTRAL MORTGAGE & HOUSING CORPORATION	2.	2.							
DOMINION BUREAU OF STATISTICS			1.						
ELDORADO NUCLEAR LTD.	503.	138.	4.	41.			3.		
ENERGY, MINES & RESOURCES									
Geological Survey of Canada							22.		
Observatories Branch	10.			2.6			9.6		

GOVERNMENT AND AGENCY EMPLOYMENT IN THE NORTH - 1968

DEPARTMENT OR AGENCY	YEAR ROUND ESTABLISHMENT				SEASONAL ESTABLISHMENT				CASUAL EMPLOYMENT			
	Skilled		Unskilled		Skilled		Unskilled		Skilled		Unskilled	
	Hired in south for northern service	Hired Locally	Hired Locally	Hired Locally	Hired in south for northern service	Hired Locally	Hired Locally	Hired Locally	Hired in south for northern service	Hired Locally	Hired Locally	Hired Locally
Marine Sciences Branch					24.							
Inland Waters Branch	16.	6.		4.	3.5					2.		3.
Survey & Mapping Branch	6.3				8.6			5.				0.9
Polar Continental Shelf	22.								15.			5.
FISHERIES & FORESTRY												
		1.						11.		1.		
INDIAN AFFAIRS & NORTHERN DE- VELOPMENT												
Canadian Wildlife Service	10.				7.			3.	15.			6.
Indian-Eskimo Economic Development	1.											
National & Historic Parks Branch	12.	7.		5.				7.		3.		4.89
Northern Economic Development	70.	24.						38.		6.		1.

APPENDIX "B"

GOVERNMENT AND AGENCY EMPLOYMENT IN THE NORTH — 1968

DEPARTMENT OR AGENCY	YEAR ROUND ESTABLISHMENT			SEASONAL ESTABLISHMENT			CASUAL EMPLOYMENT		
	Skilled		Unskilled	Skilled		Unskilled	Skilled		Unskilled
	Hired in south for northern service	Hired Locally	Hired Locally	Hired in south for northern service	Hired Locally	Hired Locally	Hired in south for northern service	Hired Locally	Hired Locally
Territorial Relations branch Community Affairs Branch	299.	22.	29.	12.	38.	57.	2.	14.	49.
	2.	2.	1.		1.	2.			1.
	6.	17.					1.		
JUSTICE									
MANPOWER & IMMIGRATION	8.	4.							
NATIONAL DEFENCE FENCE Canadian Armed Forces Defence Research Board	390.	1.	6.						
	1.								
NATIONAL HEALTH & WELFARE						(No Report)			
NATIONAL MUSEUM OF CANADA Museum of Man	1.5						2.		

GOVERNMENT AND AGENCY EMPLOYMENT IN THE NORTH — 1968

DEPARTMENT OR AGENCY	YEAR ROUND ESTABLISHMENT			SEASONAL ESTABLISHMENT			CASUAL EMPLOYMENT		
	Skilled		Unskilled	Skilled		Unskilled	Skilled		Unskilled
	Hired in south for northern service	Hired Locally		Hired in south for northern service	Hired Locally		Hired in south for northern service	Hired Locally	
Natural Science	1.			1.		.25			
NATIONAL RESEARCH COUN- CIL	196.		47.				2.67	12.	0.68
NATIONAL REVE- NUE	3.	13.							
Customs & Excise	2.	4.							
Taxation									
NORTHERN CANA- DA POWER COM- MISSION	124.	60.	24.						16.
NORTHERN TRANS- PORTATION COM- PANY LIMITED	3.	9.	1.	204.	32.	148.			
POST OFFICE	35.	320.			80.			43.	
PUBLIC WORKS									
Pacific Region	10.	14.	19.						353.
Fort Churchill	10.	17.	16.	1.			21. 2.	27. 7.	33. 33.

GOVERNMENT AND AGENCY EMPLOYMENT IN THE NORTH - 1968

DEPARTMENT OR AGENCY	YEAR ROUND ESTABLISHMENT			SEASONAL ESTABLISHMENT			CASUAL EMPLOYMENT		
	Skilled		Unskilled	Skilled		Unskilled	Skilled		Unskilled
	Hired in south for northern service	Hired Locally	Hired Locally	Hired in south for northern service	Hired Locally	Hired Locally	Hired in south for northern service	Hired Locally	Hired Locally
Northwest Territories Quebec Region	2.	14.	32.	14.	2.	23.	60. 4.	24. 1.	101. 13.
R.C.M. POLICE	200.	26.							
TRANSPORT Air Services Marine Services	461.	25.	18.	4.			41; 42.	10.	103. 20.
GOVERNMENT OF N.W.T.					(Did not report)				
GOVERNMENT OF YUKON	271.	349.	78.		28.	29.		28.	34.

Government
Publications

Government
Publications




1968

Canada. Advisory Committee
on Northern Development
Government activities in
the North

Government
Publications

PLEASE DO NOT REMOVE
CARDS OR SLIPS FROM THIS POCKET

UNIVERSITY OF TORONTO LIBRARY

DECATALOGUED

